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THE OFFICIAL MAGAZINE OF
THE DEPARTMENT OF THE ARMY

The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern.

The Digest is published under supervision of the Army Chief of Information to provide timely and authoritative information on policies, plans, operations, and technical developments of the Department of the Army to the Active Army, Army National Guard, and Army Reserve. It also serves as a vehicle for timely expression of the views of the Secretary of the Army and the Chief of Staff and assists in the achievement of information objectives of the Army.

Manuscripts on subjects of general interest to Army personnel are invited. *Direct communication is authorized to: Editor, Army Information Digest, Cameron Station, Alexandria, Va.*

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COVERS: Diverse aspects of the far-ranging, multi-capable Army are depicted as the Army's "Old Guard" — 1st Battle Group, 3d Infantry — parades in the Nation's Capital while on back cover troops of the 2d Airborne Battle Group undergo combat training on distant Okinawa.

COMMAND LIN

Army Views On Vital Issues

ON SECURITY IN DEPTH

"National security cannot be measured merely in missiles, planes, tanks, ships, and trained fighting men. In the final analysis it must be measured in the productivity of our fields and factories, in the fruitful employment of the energy and initiative of our people, and in their indomitable will to protect our individual freedom and dignity as human beings. If we are to be secure, our country must be kept strong and dynamic in its economic and social fabric, steadily growing and advancing, never slipping backward for any reason, be it from the consequences of natural disaster or the neglect of any element of our economic armor."

Secretary of the Army Wilber M. Brucker,
at dedication of flood control project,
Fargo, North Dakota, 14 October 1960.

ON MEN AND WEAPONS

"The long-bow, the catapult, and the smooth-bore musket all had their day. They were termed horrible weapons of destruction at the time they came into being, but nevertheless had far reaching effects on the course of wars. They did not, however, make man obsolescent. Man is the ultimate weapon, and we must evaluate each new system as it affects him."

Major General Marshall Stubbs,
Army Chief Chemical Officer,
before the American Chemical Society,
Cleveland, Ohio, 8 April 1960.

ON A MOBILE-MINDED ARMY

"Today's implements of ground warfare achieve their potential only when manned by highly trained soldiers of intelligence, character, and imagination who are completely flexible in their approach to the unique problems of defense in a unique era . . .

"Our Army must not only be mobile in its equipment; it must be mobile in its thinking. Perhaps no other characteristic is so important in preparing us to meet the challenge of the 60's."

General George H. Decker, Army Chief of Staff,
before National Defense Transportation Assoc.,
New Orleans, Louisiana, 3 October 1960.

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SENIOR ASSOCIATE EDITOR
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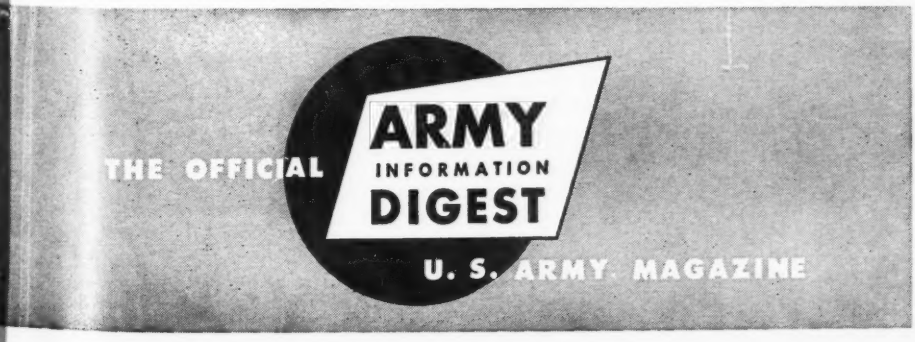


FEBRUARY 1961
VOLUME 16 NUMBER 2

"To act as men of thought; to think as men of action"

Quality is the Answer

The Role of ROTC in the Supreme Contest of Our Times

FROM our Nation's founding as a constitutional Republic through the era of the Fourteen Points and the Four Freedoms, Americans have sought a world built on principles of the inherent worth and dignity of the individual. In pursuit of this goal, it is apparent that we of the Free World shall be opposed in the future, as we are today, by the Sino-Soviet bloc of Communist nations.

It is already evident that this struggle will not be restricted solely to things military. It encompasses the spectrum of human endeavor—scientific, economic, political, cultural, spiritual and educational. Indeed, the educational area is where the struggle is most critical; it is here that the leaders in all fields are developed.

The military, those who stand as a shield against the threatened use of Soviet military forces, depend in large measure on our educational system to provide leaders for the future. This is particularly true of the Army, the one service which relies predominantly upon the Reserve Officers Training Corps for the large numbers of junior officers necessary to meet military requirements.

The past decade has demonstrated the fallacy of placing sole reliance on the deterrent effect of any single weapons system. In Europe, the Far and Middle East, and now in Africa

The Honorable Wilber M. Brucker
Secretary of the Army

and the Caribbean, Communist efforts at incursion and erosion have ranged from "sputnik diplomacy" to infiltration, sabotage, terrorism, guerrilla warfare, and limited war operations, with the ever-present likelihood of general war. For the first time in our history, the continental United States is exposed to devastation by foreign military action.

Experience teaches that each recurring cycle moves at increased tempo, with reaction-time and lead-time progressively diminished by the inroads of technology. The margin of time which oceans and steam power provided in World War I no longer exists. Moreover, warfare is no longer limited to the theater of a gladiatorial pit, but has been catapulted into the arena of contending continents. Overshadowing all is the ever-present possibility that a few neurotic Communist leaders can plunge this planet into Armageddon.

Our National Military Program calls for flexibility and response in depth, an adaptability to changing and totally unforeseen situations. The Armed Forces of our Nation must be maintained not only at the strength necessary to provide such flexibility and response in depth, but also in a state of readiness compatible with the technological and ideological changes in the world today.

The United States Army is an integral and vitally necessary part of our Armed Forces. While we cannot with clarity foresee what will develop from future generations of weapons, worldwide, it would be reckless to presume that new weapons systems would drive the airman from the sky or the sailor from the sea. Nor do we conclude, however tempting it might be to do so, that infantry, armor and artillery have lost their decisive roles. It cannot be repeated too often that Man, Communist or Free, is the "ultimate weapon." It behooves us to make certain that he is given the best leaders possible.

To provide these leaders the Army needs, as never before, young men with diverse educational backgrounds not only in the sciences, but in arts and letters, men of vision, imagina-

"To provide leadership the Army needs young men with diverse backgrounds."

tion, and courage, men capable of developing into MacArthurs and Eisenhowers.

The United States Army has traditionally depended on its own Military Academy at West Point to train leaders, but today that Academy cannot possibly answer the leadership demands of an 870,000-man Active Army and a 1,400,000 Ready Reserve. As in the three war crises of the immediate past, the Army must call again on students in our colleges and universities to be the leaders. The challenge which the Army and Nation now face is the students' challenge. It is a challenge to the educational system in which they are enrolled.

While West Point annually provides about 500 officers, the Army looks to graduates of the Reserve Officers Training Corps Program for the bulk of its junior leaders. The number of Distinguished Military Graduates of ROTC alone is more than twice that of the graduates from West Point. Today about two-thirds of the officers on duty in the Active Army are reservists, originally commissioned in the Army National Guard and Army Reserve, products of our civilian educational system.

Before the advent of atomics and supersonic means of delivery, a margin of from three to six months after Mobilization Day (M-Day) was allowed for the training of reserves and their formation into units. Today we must have an Active Army deployed on the front lines, supported by a Ready Reserve consisting of fully trained leaders and men organized into units with specific M-Day missions. Units of the Active Army must respond in a matter of hours, as did the ground elements which went into Lebanon recently.

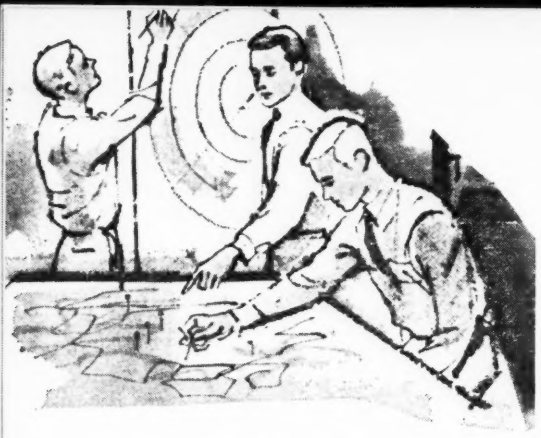
TIME was when a man possessed of the means and will to lead might recruit a group of retainers, outfit them with uniforms and mounts, and report them as volunteers. Today it is not enough that a potential officer should have a grasp of the fundamentals of his profession. In this atomic age, he must be prepared for warfare involving nuclear physics, international politics and strategy, and foreign policy. He must be a leader, an administrator, a staff specialist, an individual who measures up to the philosophical imperative taught by the ancient Greeks—"to act as men of thought, to think as men of action."

If education is to be training for life's responsibilities, it must take cognizance of the requirements for community defense and protection which allow individual growth.

Today the establishment of the rule of law in the affairs of men depends on moral strength and dedication. In individuals it calls for a sound mind in a strong body; in the body politic of nations it calls for moral leadership backed by a readiness to defend. One cannot exist without the other. This is why the study of military science within our civilian educational institutions is a part of our democratic way of life.

This is no longer a world in which good can exist without preponderant power to support it. The nation which permits its will for survival to be weakened by the search for comfort or convenience in the face of military aggressors will go the way of the Carthaginians. When predatory nations are armed with highly destructive, long-range weapons, the task of leadership becomes even more demanding.

As recent events in Africa, Southeast Asia, the Middle and Far East have demonstrated, the existence of modern, combat-ready forces, both active and reserve, underlines the Free World's admonition to aggressors to heed the rule of reason. In the logic of international affairs it becomes increasingly evident that merely being ready-to-go often obviates the necessity to go.



"Man, well-trained, well-armed, well-led, is the indispensable precision tool of combat—'the ultimate weapon.'"

Deployment in Depth

AS guardians of the peace, the United States and its Free World allies have been able to hold aggressive Communist forces in check by deployment of ground forces along the perimeter of the Sino-Soviet empire. Today the front lines of American security extend along the entire border of the Free World. More than half of the operating forces of the Army is stationed overseas along the border of freedom. Its presence is tangible evidence of our determination to support the mutual defense system which links the United States with more than 40 other countries. This deployment is our "forward strategy" for maintaining the peace.

The presence of five divisions of our Seventh U. S. Army in Germany and two divisions of our Eighth U. S. Army in Korea represents only part of the total potential. In addition to rocket and missile units integrated into our Corps and Armies, such forces as the Southern European Task Force and the air-transportable missile command in Korea reinforce allied armies with effective fire support.

Backing up our overseas forces, there are in the United States additional forces in various degrees of readiness. These range from the Strategic Army Corps (STRAC), which is ready to move and fight in a matter of hours, to our Army National Guard and Army Reserve units which are prepared to assume predesignated positions in our order of battle following mobilization.

Ready Reserve Forces, our Army National Guard and Army Reserve, comprise our defense-in-depth. They have roles and missions identical with those of the Active Army. As coequals each component must be organized, trained and equipped for prompt and sustained combat, qualified in every respect to bear the Army's responsibilities in case of war.

Under war conditions, there will be insufficient time to create an officer corps competent to handle the tasks of restoring order at home and marshalling forces for counter-attack abroad. There must be "in being" a nucleus of trained leaders available in every area of the land to respond instantly to any crisis.

A stockpile of machine tools is needed before large-scale production can begin. Even more important are the stockpiles of leadership and of specialist skills which must be widely distributed and "in being" in our society if we are to have the response capability so urgently needed. These skills are a perishable commodity; they must be sustained and renewed by constant training and by the infusion of young leaders on a continuing basis.

The Obligation to Serve

Before our society with its free institutions can flourish in peace it must make certain that it survives. The Nation's security and the preservation of our democratic ideals depend in a large measure on every young man's accepting the responsibilities of active and vigorous citizenship. This requires the contribution of everyone's leadership, talent and service to the limit of his capacity.

The concept that every citizen owes

a duty to participate in the common defense is rooted in American tradition. In his historic paper on "Sentiments on a Peace Establishment" written to Alexander Hamilton before adoption of our Constitution, George Washington declared: "It may be laid down, as a primary position, and the basis of our system, that every Citizen who enjoys the protection of a free Government, owes not only a proportion of his property, but even of his personal services to defense of it. . ." Washington also recognized the interchangeability of the soldier's and citizen's roles as he observed: "When we assumed the soldier we did not lay aside the citizen."

ROTC graduates were indispensable in World War II when the officer corps had to expand from 12,000 to 800,000. Twelve percent of World War II officers were ROTC graduates. General George C. Marshall, himself a product of civilian-military training, repeatedly emphasized that the available pool of 140,000 reserve officers spelled the difference between victory and defeat in World War II. Many of those fine reserve officers stayed on extended active duty and are in military service today. Eight of the Army's top-ranking general officers now on duty, including General George H. Decker, Chief of Staff, are products of the Army ROTC.

Since the Korean War, the college ROTC program has been materially expanded, with more students participating than ever before.* Today, a total of approximately 255,000 students are enrolled, and the need for their services was never greater.

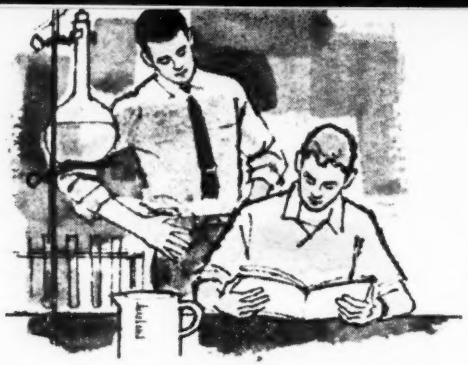
Major Stresses

DURING my five-year tenure as Secretary of the Army, I have witnessed the acceleration and intensification of the Army's tasks. Today the Army, which has faithfully performed tasks in peace and war for the past 185 years, is being subjected to a three-way stretch:

First, world unrest and tensions demand that the Army be in full combat readiness at all times. Yet our traditional policy is to maintain an active Army at minimum size consistent with only immediate needs. There can be no doubt that in event of emergency the Army must have the capability to expand rapidly, to deploy its forces for general or limited

*Currently, the Army ROTC program encompasses 233 units at 248 institutions in the Senior Division, 40 units at 40 institutions in the Military Schools Division, and 92 units at 258 secondary schools in the Junior Division, plus 66 units at 93 secondary schools participating in the National Defense Cadet Corps Program.

A potential officer must be a well-rounded personality, educated in many fields.



A modern army requires many scientists.

war, with or without nuclear weapons. This spells the imperative need for reserve officers.

Second, while the Army has been reduced numerically, our international commitments have been steadily expanding. We have pledged ourselves to assist foreign nations which may be threatened by Communist aggression. Under existing treaty arrangements we are administering assistance under the Military Assistance Program in 42 allied countries. We are training over 200 allied divisions, approximately 80 per cent of the land-force strength of the Free World. We are participating in 12 regional pacts.

Third, the Army is undergoing an accelerated transition to modern weapons, doctrines, and concepts unprecedented in history. The familiar evolutionary process is now accelerated to the point where obsolescence frequently overtakes development. Changes once carried out over decades must now be squeezed into years and months.

Fortunately, I can report, the Army has moved rapidly to meet this threefold challenge by streamlining its organization of units, by giving full rein to its research and development efforts, and by emphasizing quality and flexibility in training.

Development of the STRAC ready force, the reorganization of divisions under the pentomic concept, establishment of missile commands and rocket units, and a realignment of research and development procedures are some of the programs which have come to fruition in the past five years. They provide the framework for a modern, mobile Army organized for instant response to the fast-moving conditions of future warfare.

However, it is to MAN himself that the greatest challenge has come.

The Army's primary job is to develop MEN, poised, alert and capable of taking full advantage of the progress thus far achieved in organization of units and development of materiel. Our paramount concern is to improve the leadership that can weld these men into effective combat units to achieve the goals of national policy.

The telescoping of time and space not only demands a higher degree of readiness than ever before, but it also places greater emphasis on the knowledge and judgment of leaders at all echelons. If the Army is to maintain the mental capacity and organizational flexibility required by the accelerated pace of scientific advances and world events, it must have a constant infusion of educated young officers capable of performing the demanding tasks of military preparedness.

ROTC Role In One-Army

WHILE the ROTC program has been a familiar part of the college scene for many years, too few people, including civic leaders and educators, are aware of or fully understand the present value and vital role of ROTC in the One-Army team. Heretofore, the ROTC program has been directed towards augmenting the reserve forces in order to provide an officer source for future mobilization. But with the compressed time span brought about by the advent of modern weapons and means of delivery, there has been a stepped-up requirement for officers for the active forces, trained not only as technical specialists but as combat leaders.

Today, under the One-Army program, the primary mission of Army ROTC is to provide junior officers

"Military leadership and specialist skills are a perishable commodity; they must be sustained and renewed by constant training and by the infusion of young leaders on a continuing basis."

for all components of the Army. A vital secondary mission is to impart citizenship training, develop leadership potential, stimulate and motivate the student for future service in behalf of the Nation. Thus ROTC has become a major officer procurement program for the Active Army, and equally important for sustaining the Reserve Components.

This change in status is the result of study and inquiry by the Army, assisted and advised by civilian educators. In 1958 I directed the beginning of a series of studies covering the entire ROTC program, including its long-range objectives and the Army's projected requirement for ROTC graduates relating to anticipated male college enrollment in 1970.

As a result, a carefully considered requirement has been established for 14,000 ROTC graduates to join the Active Army annually. Of this number, approximately 1000 are expected to obtain Regular Army commissions annually through the Distinguished Military Graduate Program. The remainder serve either under the two-year program with the Active Army or on six months active duty with subsequent extension of their reserve obligation.

Curriculum Changes

SIGNIFICANT changes have transformed the ROTC curriculum in the past decade. Formerly, emphasis was placed on preparation of technical specialists for the Engineer, Ordnance, Signal and other military branches. Beginning in 1952-53, however, the emphasis on "Branch Material" offerings was reduced. A new General Military Science (Branch Immaterial) Course, designed to give primary emphasis to military principles rather than to application of techniques, has been established in some 80 per cent of the educational institutions having ROTC units. Besides broadening the base of ROTC subject appeal, this innovation permits an added measure of flexibility in assigning graduates according to the Army's need and the graduate's desire, rather than in restricting assignments to available openings in a particular specialty.

Pursuit of Excellence

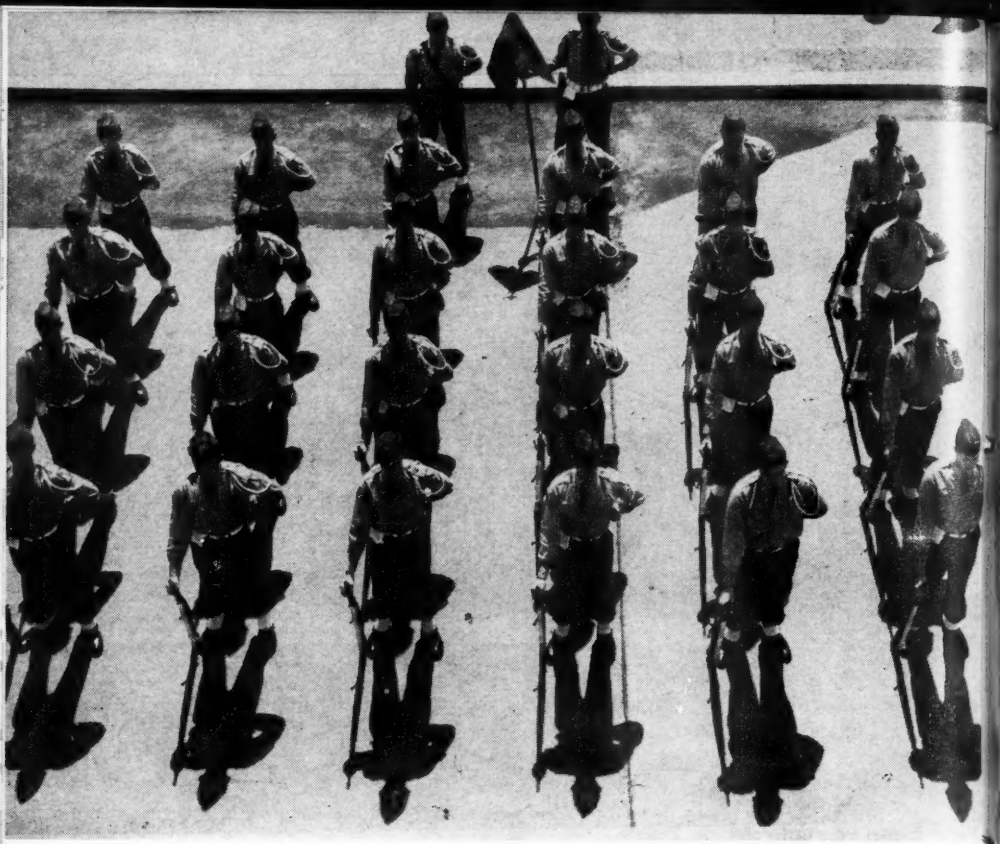
RELATIVELY few students entering civilian educational institutions look to careers in the public service. By maintaining on-campus programs the Army makes known the advantages of a military career. With the incentive of ROTC participation as an alternative means to discharge his military obligation under the Reserve Forces Act of 1955, the young man has a chance to "get his feet wet," to test his capabilities and aptitudes in a field which he might not ordinarily have considered. Many times the very college students who have been initially opposed to ROTC training develop into exceptionally able leaders, either in civilian or military pursuits, after having such training.

The ROTC undergraduate receives approximately 750 hours of military instruction consisting of four courses conducted concurrently with studies pursued during the academic year and one six-week summer training camp, usually between the junior and senior

Junior leaders come from our colleges.

"Today we must have an Active Army deployed on the front lines of freedom supported by a truly Ready Reserve consisting of trained leaders and men."

FEBRUARY 1961



"The college ROTC program has been materially expanded, with more students participating than ever before . . . and the need for their services was never greater."

years. In summer camp the student applies theory learned in the classroom under conditions which cannot be duplicated on-campus.

Enrollment in Advanced ROTC is elective on the part of the student and selective on the part of the Professor of Military Science and the college authorities. Upon being selected for and agreeing to take advanced training, the student signs a contract to accept a commission, if offered, and to fulfill his active-service obligation upon graduation.

The Army will never be any better than the people who compose and lead it. We have a continuing need to attract the most promising young men and to motivate them to choose the Army as a career.

If the Army is to be ready to meet the challenges of the future, it must be permitted to compete with all other bidders for talented youth. The opportunities for service in business and industry are made manifest daily on every campus. It is only fair that the opportunities for serving the Nation by maintaining its armed strength shall be similarly represented.

Compulsory Vs. Elective

REFLECTING the increasing pressures and demands of modern campus life, proposals have been advanced by some state legislators, educators, and student leaders that ROTC should be placed on an elective basis. While the Army recognizes the free choice of the institution in this matter, it emphatically prefers that the basic two-year course shall be required.

Outstanding cadets may be offered commissions in Regular Army; others serve in the Reserve forces.

Only in this way can the Army impart an awareness of the responsibilities of citizenship and motivation for service, and select better qualified students for the Advanced Course.* Currently 162 schools, including the majority of land-grant colleges, have compulsory Basic ROTC programs. Another 86 units are operated at institutions where Basic ROTC is an elective.

From the Army's viewpoint, until systems of predicting and measuring individual potential are foolproof, it will be necessary to have both Basic and Advanced ROTC programs to serve as a screening device, to observe and measure the young man's standard of performance over a significant period. The fact that many who participate in Basic ROTC do not follow through by attending the Advanced Course is, of course, no argument for doing away with participation in the Basic Course. By this logic, we might as well do away with mathematics, languages, chemistry and other required courses that a student studies but might seldom use. Participation in ROTC is of lasting value, contributing to the development of a well-rounded graduate and increasing his awareness of his responsibilities to the community and the Nation.

Recent Innovations

THE Army has shown flexibility in thinking, and a willingness to modify

*It has been noted that attrition in the Advanced Course at schools where ROTC is a required subject is substantially lower than at elective schools. (5 percent at required, 26 percent at elective.)

When an educational institution changes its ROTC program from compulsory to elective basis, the results are particularly damaging. At the University of Wisconsin, for example, enrollment dwindled from 952 in 1959 when it was compulsory to 323 when it was made elective—a decline of 66 percent. At Cornell, the decline was 57 percent in Basic ROTC. Such drastic decline denies the Army the broad base from which to select students of quality for the Advanced Course.

Curriculum aims for quality leadership.

Punahou Academy Junior ROTC unit in Hawaii illustrates wide extent of program

its programs in the light of honest and enlightened criticism. We are meeting and resolving the questions raised by educators in the field of accredited curriculum hours. We are reorienting the curriculum to insure that the program produces the quality leadership desired. Following two years of study by the Army staff, I approved on 12 February 1960 a revised curriculum for the Advanced ROTC program, incorporating features that are responsive to the requirements of modern education, the pressure of time on the student, and the need for equitable academic credit.*

Administrative problems on campuses where both the Army and the Air Force offer ROTC have been resolved by modifying the Basic ROTC curriculum to authorize the substitution of 30 hours in university-taught courses. This establishes uniformity between the Army and the Air Force in number of military contact hours.**

The Army Advisory Panel on ROTC affairs, which includes a group of distinguished civilian educators, meets periodically, and its recommendations provide guidance to the Army staff in formulating policy matters regarding the whole ROTC program. With the benefit of these continuing recommendations the Army keeps abreast of modern educational requirements.

Forward Steps

THE Army has consistently supported some form of equitable Federal assistance to those institutions conducting ROTC programs. Assistance in the form of ROTC facilities construction or, in lieu thereof, a per capita reimbursement for each commissioned graduate has been strongly endorsed by the Army.

The Army recognizes that the ROTC program must be dynamic. We foresee and welcome adjustments to accommodate the diversified needs of the university, recognizing the difference between institutions in curricula and in extent and type of on-campus activity.

In its quest for quality, the Army recognizes that a sound college education is essential for the leadership of tomorrow's Army. It believes that the staff, faculty and students at our Nation's colleges and universities also see the importance of their roles in the Nation's defense. *It is inconsistent to admit an obligation to country in*

*A total of 90 hours of academic subjects may be selected by the student in the areas of science comprehension, effective speaking and writing, general psychology, and political institutions for which Army and academic credit is given. Military subjects which can be more effectively conducted at Active Army installations will be given during summer camp training periods and in post-commission orientation courses.

**Both Army and Air Force now offer 150 hours instead of 180 as formerly—to make for consistency of treatment. The modified basic course has been approved for implementation by all colleges and universities on an optional basis beginning with School Year 1961-62.

"Frankly and avowedly, the Army calls upon the students in our colleges and universities to . . . accept responsibilities which are inseparable from our great heritage."

principle and to deny it in practice on the grounds of interference with academic freedom or competing demands for the student's time. The Communist threat calls for realistic thinking in terms of survival, or there can be no freedom, academic or otherwise, only time for remorse.

THE Cold War, as it exists today, is more than a mere standing-at-arms between the Free and Communist worlds. Our military posture is the result of a fundamental conflict. In the final resolution of this conflict our entire educational system is deeply involved.

The educational systems of the Iron Curtain countries train their men as soldiers of the state first, and then as scientists, technicians, even painters and poets, as part of their overall plans for world domination. From the privileged sanctuary of our campus quadrangles, laboratories and study halls dare we forget for whom the bell tolls? It tolls not for the murdered students of Prague, Riga, and Warsaw, but for those now bent to the task of the extinguishment of man's hopes. It tolls for those who "don't have the time," for those who cynically ask "what's in it for me?" It tolls for all who fail to realize the nature of this supreme contest of our times.

The United States Army, as an agency which comes from the people, remains closely associated with the educational institutions from which flow the springs of our culture. Frankly and avowedly, the Army calls upon the students in our colleges and universities to stand up and be counted among those Americans who accept the responsibilities which are inseparable from our great heritage.

In ten years of pioneering effort, the U. S. Army has become a leading professional in

Teaching

FROM all over the Nation they came, some 200 representatives of civilian institutions as well as all the Services, to attend the first Armed Forces Educational Television Conference in Washington, D. C., sponsored by the Office of the Chief Signal Officer.

They witnessed the opening of the Pentagon's first video tape facility, and the first extensive use of video tape for a military briefing. They heard what is being done in the military services, in civilian educational institutions, and by television networks, in the field of television education. They saw exhibits of equipment that has been developed for such endeavor.

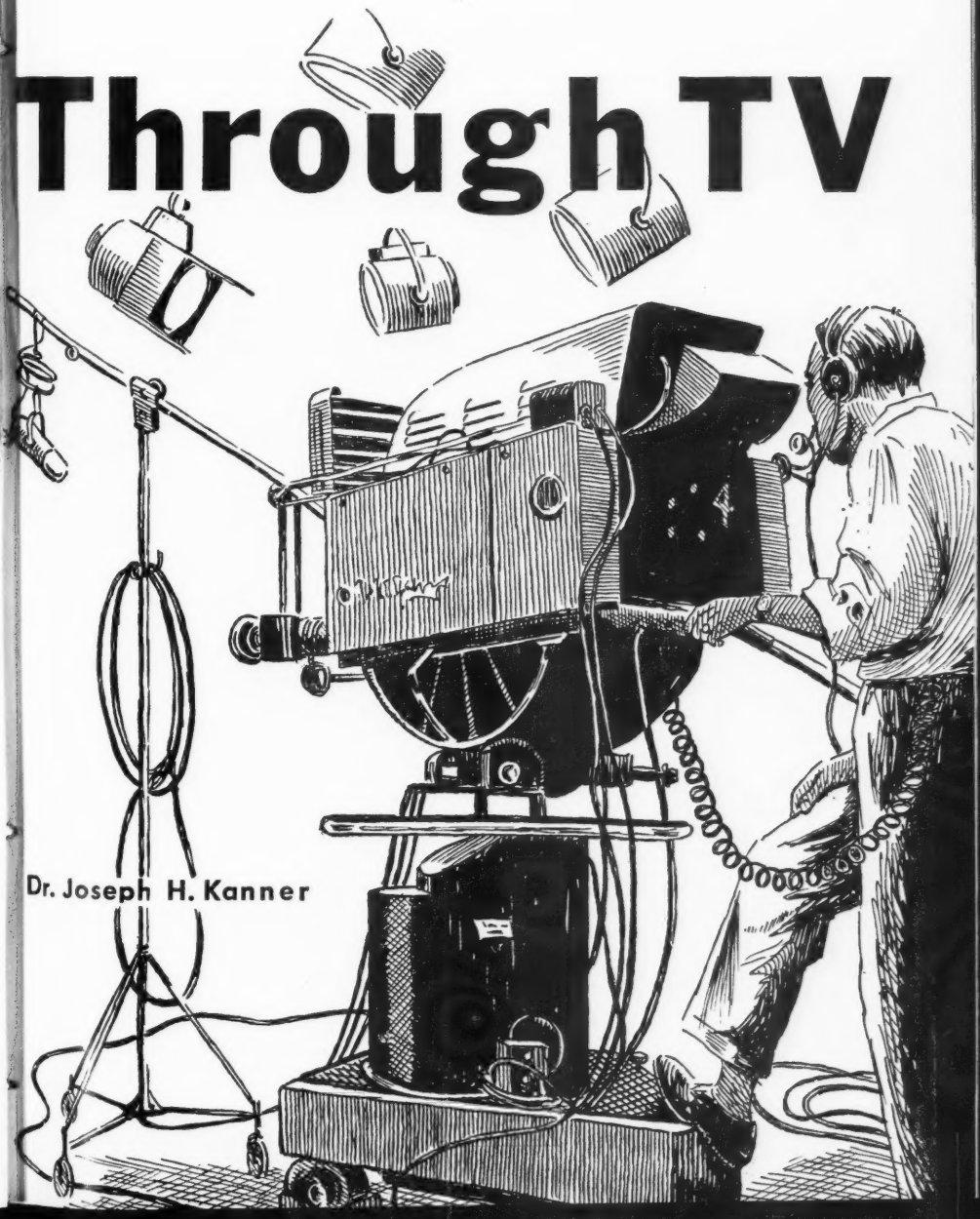
Ten years ago such a conference would not have been possible because there weren't that many specialists—either civilian or military—with sufficient interest or experience to have made such a gathering possible. But today television is becoming increasingly important as an educational adjunct, and promises to become even

DR. JOSEPH H. KANNER, Chief, Audio-Visual Applications Office, Army Pictorial Division, Office of the Chief Signal Officer, was Chairman of the first Armed Forces Educational Television Conference.

more so as further experience is gained.

Introduction of the video tapes filmed at military installations throughout the country and projected by the Pentagon's new tape facility is one new advance in the field. Use of video tape is planned to speed communications between outposts of the Armed Forces and the Pentagon, since the tape can be shown immediately after it is taken. It was particularly fitting for the first demonstration to be carried out under auspices of the Army's Chief Signal Officer since the Army pioneered in the use of television in teaching.

Through TV



Dr. Joseph H. Kanner

Teaching Through TV

The First Decade

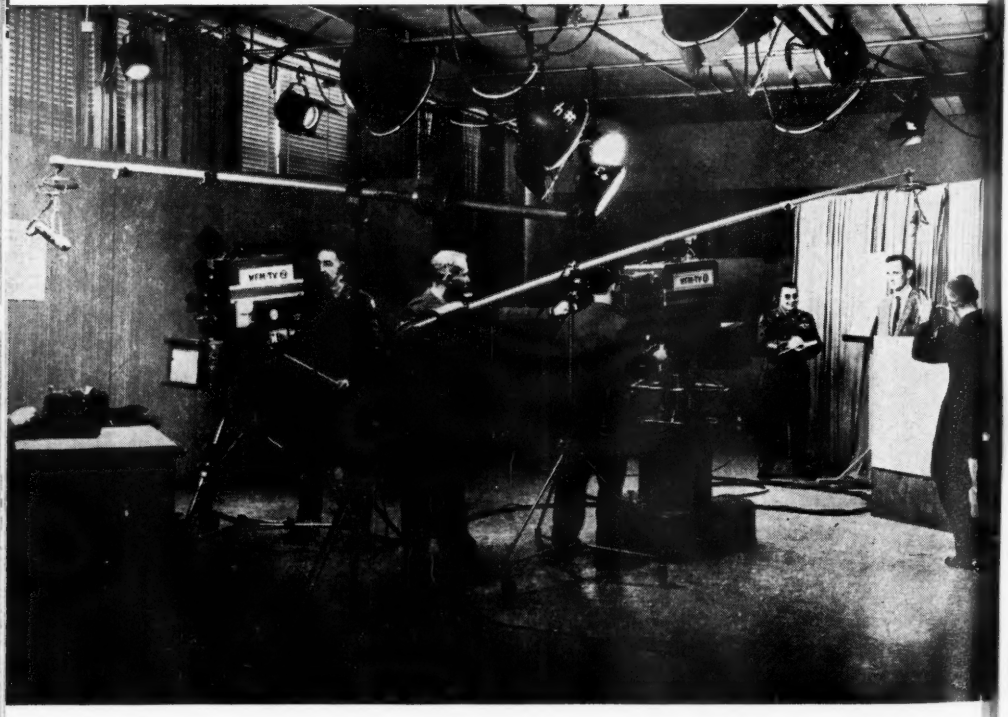
JUST ten years ago the first U.S. Army mobile television unit was delivered to Fort Monmouth, New Jersey, in one of the first attempts of the U.S. Army Signal Corps to carry out its newly assigned mission of developing television for military training and information uses. Today the Army is the leading user of television for training.

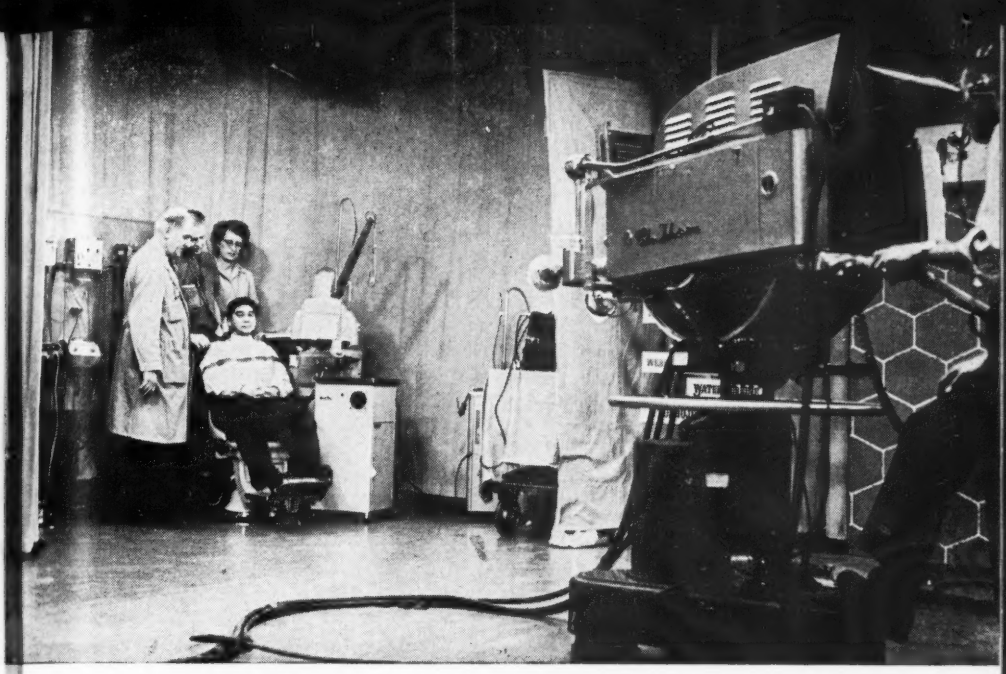
The unit's design and purchase reflected the faith of many key personnel in the potential value of television for the Army. That optimism was reflected by the Army Pictorial Center personnel who were to operate it—but it was not matched by any data pertaining to the effects of television upon learning nor by development of effective production techniques. These had to be planned, tested, measured.

For the first year the mobile unit felt its way, visiting Army training installations, demonstrating the equipment, televising training presentations, learning how to apply television to many different teaching situations. Opinions and reactions of instructor personnel were sought. From all this, it was realized that much more had to be learned.

For two years, experimental facilities were operated at Fort Monmouth and at Fort Gordon to develop use of television for school training. A study was conducted by the Human Resources Research Office, George Washington University, under sponsorship of the Chief of Army Field Forces and Office of the Chief Signal Officer. Major objective was to compare teaching effectiveness of conventional and television instruction.

In the decade since first mobile equipment was delivered to Fort Monmouth, the Signal Corps has advanced to use of complicated equipment in teaching through TV.





A compatible color television system in use since 1956 at Walter Reed Army Medical Center permits viewers to see close-ups of medical and dental procedures.

The study was conducted at Fort Gordon, Georgia, since a basic training program was already being conducted there, and a closed circuit television facility was available. Mobile television units from the Army Pictorial Center also participated.

Fourteen representative hours of basic training were selected. Groups of basic trainees were divided—one taking instruction by television, the other by conventional methods. They were then given written or performance tests to determine what they had learned. A month later, some groups were given a review using television recordings of original instruction to determine its effects upon retention.

Overall the study indicated that television instruction was never inferior to the conventional method and was actually superior for some types of learning such as recognition training, comprehending relations among parts, manipulation of equipment, and rote learning. There was evidence that lower aptitude groups learned better from television than from conventional methods. At the same time, the television operatives were learning and developing many production techniques for effective presentation.

Original Contributions

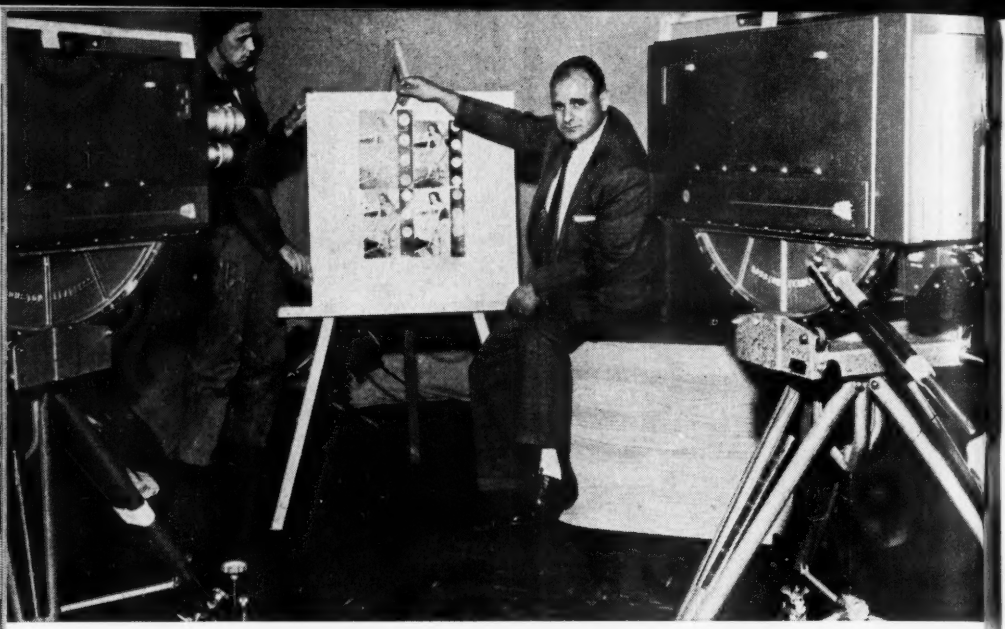
SINCE this first study was completed in 1953, the Signal Corps has continued with similar work at the Signal Schools, Fort Gordon and Fort Monmouth and other installations, making contributions of significance to military television and civilian educational programs.

Some original contributions made by the Signal Corps to the entire educational field include:

► demonstration of the feasibility of training entirely by television for periods as long as a week;

► demonstration of the feasibility of rapidly training effective television instructors; and

► comparative study of the effectiveness of color as compared to black and white television.



Experiments are being carried out at Fort Monmouth to determine effectiveness of color television as compared to black and white in teaching classes at Army schools.

As a result of these pioneer studies, the Army by 1956 was able to propound television doctrine through publication of AR 108-40, *Television.* In 1959 the first military television technical manual, TM 11-491, *Training by Television,* was published, describing the techniques of applying television to military training.

During this same period Army installations were receiving assistance from the Signal Corps in acquiring and installing equipment, obtaining personnel, and arriving at an effective television utilization program.

The Army TV Chain

TODAY, thousands of students Army-wide are receiving instruction by television. Facilities at Fort Gordon and Fort Monmouth have tripled in size and scope since 1952. Several other major installations use television to varying degrees. These include Walter Reed Army Medical Center, the Transportation School, Air Defense School, Ordnance Guided Missile School, Quartermaster School, Army Information School, and Army Language School. Additionally, several installations are currently studying their requirements or procuring equipment to further TV training.

In addition to live television instruction, the Signal Schools at Fort Monmouth and Fort Gordon transmit films, kinescopes, video and tape recordings. Use of video tape recorders greatly expands the usefulness and flexibility of television as a training medium.

At both Schools, television is utilized in one or more of the following ways—in mass training, adjunct training, film transmission, television recordings, and mobile field use.

Mass training. By this method, an outstanding instructor may simultaneously teach a number of classes or large groups. Advent of video tape has eliminated the requirement for simultaneous instruction. In either case, economies are effected in instructor and training aid requirements.

Adjunct training brings into the regular classroom materials which would

ordinarily be unavailable. Thus a new piece of equipment may be televised to groups in the classroom.

Film transmission makes available training films, television recordings or kinescopes and video tape recordings. Hundreds of hours of such material are presented over the television system weekly. The instructor simply notifies the television studio of the film subject and the time he desires it to be presented.

Television recordings are used to teach repetitive materials; they are also useful for review purposes.

Mobile television units have been developed to travel into the field to televise direct, or to record for later use, field exercises for transmission to classroom or auditorium. Such coverage eliminates or reduces the need for transporting spectators to an exercise; it insures that the viewing audiences see the most important aspects of the demonstration.

Multiple Uses

AT Walter Reed Army Medical Center, a compatible color television system has been used since 1956 in surgery and other procedures where the close-up advantages of television permit many viewers to see as well as though they were directly at the surgical table.

Panel discussions among medical and research personnel also are televised. Exchanges of information or transmissions of medical and scientific programs frequently take place between Walter Reed and other nearby medical installations. Special transmissions over closed circuit systems are used at medical and dental conventions.

A unique utilization of the facilities at Walter Reed occurred last November when The Adjutant General transmitted a course in effective writing over closed circuit television to military and civilian personnel at Fort Meade, Fort Belvoir, Fort Detrick, the National Naval Medical Center,

Closed circuit TV carries instruction between Redstone Arsenal, Alabama, and Fort Knox, Kentucky, as teaching aid.

and Andrews Air Force Base. Primary purpose of the eight hour course was to teach some 500 government employees who write letters and staff studies to make their writing more effective through brevity, simplicity, strength and sincerity.

The Ordnance Guided Missile School, Huntsville, Alabama, has made important contributions to use of television for Army training since acquiring its extensive facility in 1958. At OGMS, both fixed and mobile facilities permit transmission from missile field activities back to the classroom. Six video tape recorders permit recording of valuable information for later use. These can be edited to bring changes in techniques and materials up to date quickly and cheaply.

The School transmits by closed circuit television to the Armor School at Fort Knox, Kentucky, 250 miles north. This method enables the Fort Knox students, many of them high ranking officers, to obtain information on missile maintenance without traveling to Redstone Arsenal. It also avoids duplication of costly equipment at the two schools.

Facilities of the Missile School can be linked to nationwide networks. They have been used to transmit an address by President Eisenhower at the dedication of the George C. Marshall Space Flight Center as well as special telecasts to West Point, the Quartermaster School at Fort Lee, Virginia, the National Press Club in Washington, and to the Pentagon. (See "Teaching Missile Men," May 1960 DIGEST.)

Classroom Application

A TELEVISION facility installed in 1956 at the U.S. Air Defense School, Fort Bliss, Texas, has been used to develop an original and important application of television to military training. The size and complexity of missile equipments which are also bulky, expensive and in short supply, usually complicate conventional training methods.

In the procedure developed at Fort Bliss, the missile training equipment is brought into the television studio together with an experienced repairman-instructor. In a separate classroom, about 30 trainees watch television receivers. A trouble situation is injected into the equipment and the television cameras record all the symptoms, readings on scopes, meters, dials and so on. The regular instructor in the classroom asks a trainee to guide the television studio repairman, using a two-way intercom system to indicate the steps necessary to locate and correct the malfunction.

The trainee can ask for various meter readings or other tests; these the repairman performs as directed to assist in locating the trouble. If the first student is not successful, another is given the opportunity to seek the correct solution. All the trainees both hear and see what is going on, and in one hour six or seven problems may be solved.

Instructors report that trainees develop more confidence, work more rapidly and effectively than those not receiving such training. This technique of job familiarization through television probably has application to many other training fields.

GENERAL acceptance of television as an important addition to Army training methods is perhaps the most important product stemming from the first ten years of television development. With great strides already on record, the Army Signal Corps continues to investigate new equipments, developments and applications for television training.

The past decade has seen this development grow from what was merely a gleam in the eye of a few far-sighted, enthusiastic individuals, to its far-reaching utilization within many military units. In ensuing years, it is expected that nearly all major Army training activities may be using television. By the time the 10th Armed Forces Educational Television Conference is staged, further dramatic progress in teaching through TV will certainly be reported.

TV on Okinawa

FACILITIES of the Armed Forces radio and television station on Okinawa are utilized by the local Army civilian personnel office as part of the employee communication program. The television transmitter, which covers the entire island and has a potential of more than 100,000 viewers, is the only English-language TV station in the area, and the most powerful U.S. military TV station in the world.

Recent programs have included presentation of awards to U.S. citizen and local national employees, introduction of new staff members, panel interviews with top staff officials, all-Army sports and recreation events. Additional Japanese language programs are being planned to help increase interest among local national employees.

A study in contrasts in Berlin where

Friendship Makes a Difference

Major Allan C. McGill

MEMORIES are long in West Berlin, and often bitter—of the Red Army's arrival in 1945—of how Red troops behaved in the conquered city—of the infamous blockade that attempted to starve them, and of the Allied airlift that brought salvation from the skies. And even if memories are short, the West Berliner today merely has to glance across the street to see how his brother fares under Communist rule in the East Sector.

Because of this ever-present contrast, the West Berliner looks upon an Allied soldier, and especially an American soldier, as his protector and his friend.

Undoubtedly, this high regard for Americans helps make life in a foreign city easier, but it also has its

MAJOR ALLAN C. McGILL, Infantry, is Information Officer, Hq, Berlin Command.

Spielkiste is a portable German toyland which is supported by the American Women's Club in West Berlin.

difficult aspects—difficult because the least deviation from good behavior is seized upon, twisted, blown out of all proportion by an antagonistic East Berlin Communistic press. Often even a trivial mishap is blown up for propaganda purposes.

At the same time, the distortions of the hostile Communist press help spark the Berliners' awareness of the unobtrusive American troops. It also creates a widespread awareness among U.S. troops of their responsibility and their sensitive position in this showcase of western democracy where everyday living is under constant scrutiny and unspoken appraisal.

All these factors tend to make every American soldier and his dependents a good-will ambassador and full-time participant in the President's People-to-People program. To bolster the program, the U.S. Army in conjunction with other American governmental agencies conducts a many-phased program.

It starts with an information program which, in addition to the Troop Information aspect, capitalizes on all opportunities to publicize the mutual understanding that exists between the German and American people. Every facet of information—press, radio, speakers bureaus, band concerts, parades, routine troop demonstrations—is utilized. The climax is reached on Armed Forces Day when a parade of the entire garrison draws thousands of spectators.

Youth Programs

HAND-in-hand goes a community relations program that involves all areas of American life, civilian as well as military, in West Berlin. The program begins with first graders in American dependent schools, who begin studying the language of the host country, then participate in cultural and educational exchange visits as they progress to higher grades.

This year, for the first time, a new German-American Community school was started for youngsters from both nations. The integration program, entirely voluntary, began with two classes of 30 children each, both American and German.

Another innovation was an experiment conducted during German-American Friendship Week. Instead of merely exchanging classroom visits, a group of American and Berlin teenagers actually lived in one another's homes for a week. This now is planned as an annual affair.

American Boy Scouts in Berlin conduct their own programs with their German counterparts. In addition to regular activities such as camp-outs, they join in special events, such as attendance with German Scout guests at the American Scouts 50th Anniversary Jubilee staged in England. Scouts also help in staging the American exhibits at the West Berlin Industrial Fair, where they demonstrate activities such as first aid and woodcraft.

High school youngsters carry on the youth work. Last year at Berlin's major agricultural show called Green Week, high school students donned blue jeans and straw hats to act as "farm guides" at the U.S. rural exhibit. Attendance at these events runs into the hundreds of thousands—many coming from East Berlin and even deeper in East Germany.

Women's Groups

WOMEN'S groups of the American community in Berlin maintain people-to-people contacts. For years the American Women's Club of Berlin has raised money for scholarships for German students to Berlin's Free University and Technical University. Another feature of its extensive community relations program is collecting toys from American children for the German *"Spielkiste"*—a traveling van that loans toys to needy youngsters. The AWC also sponsors an annual show for American youngsters at Christmas time—admission price one game or toy for needy German children. Other similar programs are conducted by the Sixth Infantry Wives Club, the Noncommissioned Officers Wives and several other women's organizations.

Religious Activities

WINTER and spring bring varied activities. During Christmas, all Americans in the city make an extra effort to provide some sort of contribution. Every unit in the Berlin Command stages at least one party for orphanages or other institutions.

West Berliners look on the American soldiers as their protectors and friends. Here children greet a tank team during a training operation.

Berlin families invite American soldiers for Christmas dinner.

The annual Easter Sunrise service is a joint undertaking with a combined choir of both nationalities, and with sermons in German and English. Also during the two main holiday seasons, chaplains in the Berlin Command continuously take part in varied activities with their counterparts. Frequently they are able to extend their influence into the Soviet Zone, as when recently members of a congregation from that area made a tour of the Berlin Command chapel to get fresh ideas for a contemplated new church.

Sports

AMERICANS and Berliners meet in virtually every type of sports program. Swimming clubs use the pool at Andrews Barracks several nights a week as guests of the American installation. At football and boxing matches, at least a quarter of the audience is German. Team competition in boxing and basketball has existed for several years, and today the Germans even are fielding competent baseball teams while Americans attempt the popular German soccer. American success at soccer, however, is about on a par with the Germans' at baseball.

Cultural Events

BANDS and the Armed Forces Network with its news and music are widely popular. The 289th Army Band plays regularly at Berlin community events; it participates in the huge West Berlin Police Show, gives frequent concerts for groups of refugees from the East.

AFN-Berlin reaches into a myriad of homes not only in West Berlin but

The 289th U.S. Army Band, musical organization of the Berlin Command, frequently gives concert performances for refugees from behind Iron Curtain.

American Boy Scouts of Berlin Command stage live demonstration of first aid techniques at West German exposition.

in the surrounding Soviet Zone and East Germany. At the station's fifteenth anniversary last summer, long lines of Berlin teen-agers waited to visit the studio. Indeed, at this level AFN-Berlin reigns supreme through its popular music programs.

Reaction of adult Berlin to American cultural efforts, though more restrained than teen-age enthusiasm, is just as honestly felt in different ways. As one example, leading figures of the city government and universities were quick to accept a role in the local version of the President's "Know Your Neighbor" contest. They participated in award ceremonies and did everything possible to make the contest a success.

Official Activities

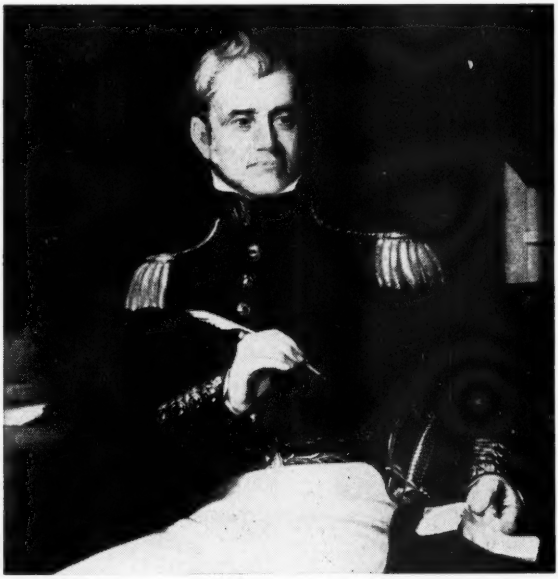
THE U. S. Army Garrison in Berlin has earned respect and appreciation through willingness to help with special projects. U. S. Army Engineers frequently make available bulldozers and other heavy equipment for leveling playgrounds, and repairing storm damage. Last year the Engineers used earth moving equipment in extinguishing a great fire in Berlin's vital coal stockpile.

Cooperation between German police and the U.S. Army Military Police has been outstanding. Faced with the vital task of keeping down incidents in this showcase city, joint patrols are conducted through the U.S. Sector. Smooth teamplay helps avoid much misunderstanding that would normally develop from the language barrier. This prevents many of the mishaps which the Communist press seeks to turn to its advantage.

Because of the sensitive position of this divided city, it has been clearly recognized that cooperation in all areas of endeavor where the two peoples meet must be a vigorous, concerted undertaking, conducted on a day-to-day basis. This extends from highest political levels where governmental officials work hard to develop programs for furtherance of German-American relations, to evidences of personal good-will and friendship that reach into all fields and daily demonstrate the truly harmonious relations existing between the West Berliners and their American protectors.

By the enduring greatness of his works, history rediscovers the contributions of Sylvanus Thayer—

Father of the U.S.



TO THE illustrious roster of men who have been responsible for the greatness of our country, modern-day historians in a fresh evaluation are giving added laurels and recognition to Sylvanus Thayer—renowned as a 19th Century educator, highly regarded as a soldier, and revered as the Father of the U.S. Military Academy.

If it can be said that an institution is but the lengthened shadow of one man, then there can be no doubt that, in the case of West Point, that man is Sylvanus Thayer.

The son of a sturdy New England farmer, Thayer's insatiable curiosity about military and scientific matters led him from the classic halls of Dartmouth College to West Point, where he was graduated in 1808. Following the War of 1812 he was sent to Europe for a comprehensive study of military education and engineering in France, and upon returning in 1817 it was almost inevitable that he should be designated Superintendent at the U.S. Military Academy.

As Superintendent at West Point from 1817 to 1833, Thayer assumed the reins of authority when the American educational system had not yet recognized the right of science to equal consideration with traditional classical education.

Military Academy

Thayer introduced a curriculum which elevated the profession of arms from a vocational skill to the level of so-called learned professions. The effectiveness of that educational program was demonstrated by successive generations of West Point graduates who assumed leadership in the arts of peace as well as war.

Graduates of the Thayer system became the backbone of the Army, and produced the leaders who, after baptism under fire in Mexico, became the great leaders on both sides in the Civil War.

Yet Thayer did much more. He was among the first to recognize the need for technical and engineering education in the United States, and his students were among the founders of many of the infant technical schools in the land. Thayer's influ-

As in the past, graduates of the Thayer system will become the backbone of the Army, furnishing the leaders who will guide its destinies in future.

Today's cadet dress uniform is same as that worn by students at West Point in the days of Sylvanus Thayer, as demonstrated by honor guard before Thayer statue.

ence thus was reflected in the Nation's education system and industrial growth.

But in the heat of expansion, even a grateful nation was not quick to recognize the extent to which Thayer had influenced the trend of national technological development. It remained for the passage of time to make clear the enduring contributions made by Sylvanus Thayer to the Nation's growth to greatness.

Hall of Fame Candidate

HIS nomination to the HALL OF FAME FOR GREAT AMERICANS at New York University has served to bring the name of Sylvanus Thayer out of obscurity toward the recognition he richly deserves. The Colonnade at New York University already enshrines such famed Americans as Abraham Lincoln, Andrew Jackson, Henry Clay, Thomas Jefferson, Patrick Henry, and many more.

Held every five years, election to the Hall of Fame can be proposed by any American for any citizen, man or woman, who has been deceased twenty-five years or more. During the most recent nomination period ending 1 April 1960, General Anthony C. McAuliffe, USA-Retired, President of the Association of Graduates, U.S. Military Academy, submitted the name of Sylvanus Thayer for consideration by the Hall of Fame electors.

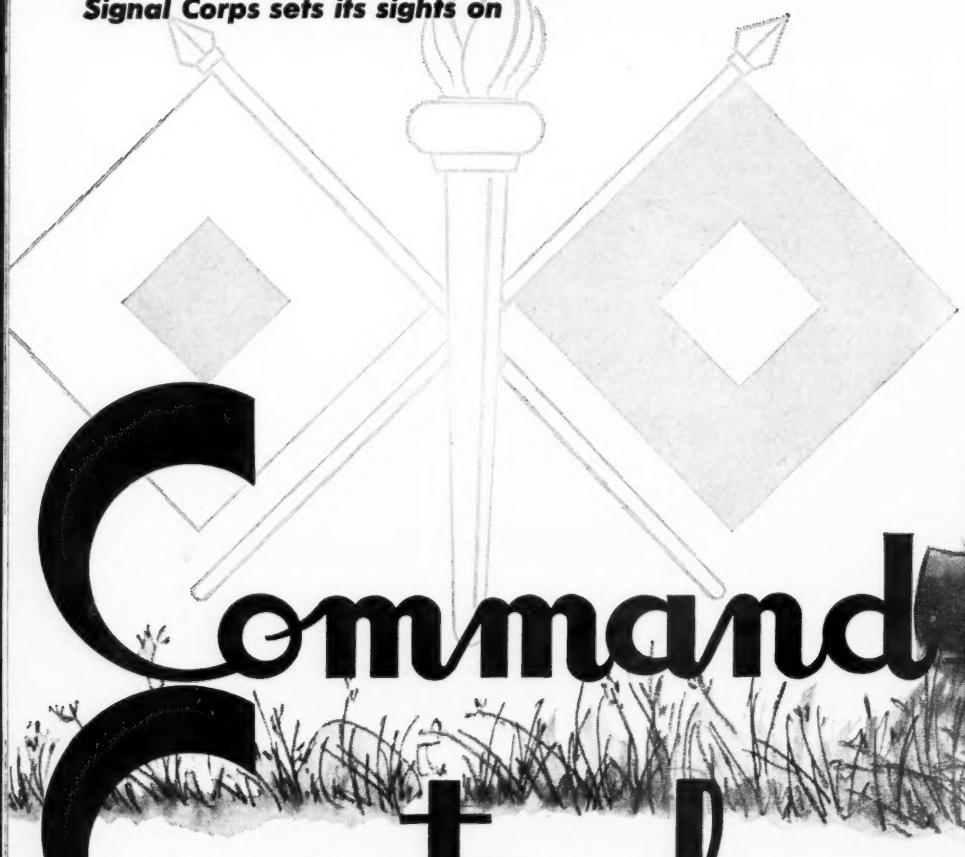
In the tabulation of ballots received from 142 members of the College of Electors, 72 votes are necessary to assure election. Individuals representing virtually every learned profession in the United States saw fit to bestow upon Thayer a total of 70 votes during the 13th Quinquennial Election in 1960, causing him to fail of election by the slim margin of two votes.

The name of Thayer was fourth among those receiving recognition by the electors, coming behind Thomas Alva Edison, Henry David Thoreau, and Edward A. MacDowell, each of whom achieved election.

This substantial and mounting recognition of Sylvanus Thayer points to the day when it may be said of Thayer, as of other great Americans who now occupy the Hall of Fame: "BY WEALTH OF THOUGHT OR ELSE BY MIGHTY DEED, THEY SERVED MANKIND. IN NOBLE CHARACTER, IN WORLD-WIDE GOOD, THEY LIVE FOREVER MORE."

The Association of Graduates, U.S. Military Academy, awards the Sylvanus Thayer Medal to the outstanding American who best symbolizes "Duty, Honor, Country."

With new devices and techniques, Signal Corps sets its sights on



Command Control for the Mo

Major General F. F. Uhrhane

"COMMAND CONTROL" is a relatively new term, but its principles and importance in combat have been recognized for many centuries. Polybius, a Grecian general who commanded troops around 270 B.C., early noted its significance when he wrote:

"It is a thing well known that opportunity, which has so great a share in the accomplishment of all designs, has the greatest share in those that belong to war. Of the wonderful inventions that have been contrived for taking advantage of opportunity, the most effective is that of making signals by means of lighted

e Modern Mobile Army

torches. By this method things may be communicated to those concerned, even though they are distant perhaps three or four days journey, and requisite assistance be received when it seems scarcely possible to expect it."

By its very nature, command control cannot be exercised without communications. Information must be received and digested; decisions must be rendered and commands issued as a result of those decisions—and all this requires communications.

Through the years transmission and reception of military signals progressed from torches through smoke signals, drums, bugle calls, signal flags, heliographs, and many others. In the 19th century, the advent of the telephone and telegraph gave the battlefield commander a tremendously potent tool for control of troops in

battle. (See "From Flying Torch to Talking Satellite," July 1960 DIGEST.)

In simple terms, command control may be likened to the control man exercises over his body. The body has sensory equipment which receives data which is then transmitted over a network of nerves to the central computer, the brain, where it is digested and decisions are arrived at; these in turn are re-transmitted to the appropriate organ for action.

In this metaphor the Army compares to the body. Means exist for extending its sense of sight, of hearing, and of some elements of its sense of touch, such as heat, by means of sensory devices. Telemetry and communications are extensions of the nerve network; computers are an extension of that portion of the brain dealing with data reduction; the faculty of speech is replaced by a transmitter, and last but not least, the striking power of the Army is represented by the fists.

Links in Combat

ON the future battlefield, the fundamental principles of the modern, mobile Army require dispersion of troops over wide areas. It is envisioned that small bodies of troops will occupy "islands" with the intervening territory being under surveillance and control by friendly fire. These small bodies of troops will not be large enough to draw enemy atomic or nuclear fire, but neither will they be large enough for effective offense.

For offensive action, it will be necessary to order and assemble several "island" groups quickly, accomplish the offensive action rapidly and on schedule, and then again disperse the troops to small islands before the enemy can amass appropriate counter fire. This will require much more effective command control than has been required in the past.

Great strides have been made in communication techniques and in the art of weaponry—especially within the past decade. With the introduction of atomic weapons and the missiles to deliver them, the Army's striking power has been increased to a potency undreamed of a few years ago. This increased power and range of weaponry has generated a need for:

- Increased range of sensing information.
- Increased numbers of types of information and communication.
- Reduced time for assemblage of information.
- Increased speed of information reduction beyond the capability of the human brain.
- Quicker decisions.
- Faster methods of transmitting decisions over longer distances, and
- Denying the use of these advantages to the enemy.

THE U.S. Army Signal Corps is responsible for developing the equipment which extends the range of the

Major General F. F. Uhrhane
Commanding General,
U.S. Army Electronic Proving Ground
Fort Huachuca, Arizona

Ground radar sets, such as this TPS-21 operated by two men, will search given areas for moving targets ranging from vehicles to individuals at medium range.

soldier's sensing organs on the battlefield. Significant developments in this area include:

Unit Control. Troops in relatively close contact with the enemy can be equipped with helmet radios for personal contact within the squad and platoon. In addition, consideration is being given to providing very small "black boxes" by which the individual unit commander can reduce his information to digital form and transmit it rapidly over a normal radio or wire circuit.

Ground radar sets are available which will search given areas for moving objects; in some instances, automatic transmittal of the information noted will be accomplished. These radar sets can range from a small portable set to be utilized by one or two men, to fairly large and complex sets requiring a 2½-ton truck to transport. This will also include airborne radar equipment, particularly the side-looking radar (SLAR).

Infrared equipments are being developed to extend the sense of sight, thus enabling the commander to see human bodies and vehicles and other heat-emitting objects in the dark. These equipments will range in size from small individual type models to those which can be put into drones or aircraft.

Small TV devices, which can observe specific points of interest and report conditions continuously or intermittently, as required, are also being investigated. The feasibility of this type of sensing device has been demonstrated in the Tiros weather satellite,

Miniaturized electronic equipment, such as man-pack transceiver, is under development for still greater mobility.

for which equipment was developed by the U.S. Army Signal Research and Development Laboratory.

Manned aircraft are also being given increased emphasis as mobile platforms for carrying photographic and other sensing devices either over enemy territory or overlooking enemy territory from which information is required.

Reconnaissance drones. Substantial progress has been made in outfitting unmanned aircraft or drones with some telemetry for immediate transmission of information obtained by photographic or other sensing devices. The first member of the drone family, the SD-1, was developed from a target drone and has been in the hands of troops for some time. Its successors —the SD-2, SD-4, and SD-5—are designed for use by successively higher echelons of command.

The SD-2 (Division) is now undergoing engineering flight tests. The SD-4 drone (Corps), a medium endurance drone, is scheduled to make its first flight by early 1961. The SD-5 (Field Army-Long Endurance) is a jet-powered delta wing aircraft which has already made several test flights at the Army Electronic Proving Ground.

Missile Sensors. Also under study is the use of missiles as sensor platforms equipped with telemetry for immediate transmission of information back to a central point. These are being considered for use when the vulnerability of other platforms is so great as to preclude their effectiveness or in those instances where the time element will not permit the use of slower forms of transport.

Nuclear Warning Devices are also under development for observing and locating nuclear bursts. Current tests of the AN/GSS-5 in the Arizona-California-Nevada area show promise for this type of warning system. Such devices will inform the commander on the direction and size of nuclear bursts; from this he can determine more readily the areas of fallout, the amount of destruction involved, and the action his troops should take to avoid contaminated areas.

Meteorological Devices, used for determining local atmospheric conditions and anticipated changes in those

New radio central is mounted in a weapons carrier, can transmit voice, facsimile or teletyped material.

conditions, are receiving substantial emphasis. This field is more accurately described as micrometeorology since it deals primarily with atmospheric conditions in small areas. Such conditions must be studied and their effects noted in support of artillery, missilery, aircraft both manned and unmanned, transportation, and communications.

Radio Communications

THE human body has a nerve system over which is transmitted the intelligence gathered by the sensing devices. In the Army, this communication network is furnished by the Signal Corps. For the modern, mobile Army, radio provides the prime means of communications in the fluid situations anticipated in future battle.

Radio communications devices now in development and being readied for production are making full use of transistors in lieu of vacuum tubes. This offers a substantial reduction in the size of the individual "black boxes" required by front-line troops.

Equipments are now being considered for development utilizing tunnel diodes which will make possible still further reduction in the size. Beyond this, there is now a new area of molecular electronics which promises reductions beyond anything previously imagined. Fortunately, as these developments progress, the smaller product becomes inherently more rugged; it will withstand greater shocks than the older models due to its reduction in weight.

For long-range radio, a new type of transmission medium is being developed which uses the troposcatter effect for transmitting beyond the horizon or line of sight without the need for relay stations.

For relatively shorter ranges of 50 and 100 miles, new single sideband stations are being developed. These stations will permit better transmission with less power than formerly when the amplitude modulation type of transmitter was in use. This new type of transmission will carry voice,

Substantial progress has been made in outfitting drones, such as the SD-2, with telemetry for transmitting photographic or other sensing data to commanders.

teletype, and digital information as well as facsimile.

For limited areas of about a 10-mile radius, studies and tests are being conducted on the Radio Central Concept. In essence, this will provide individual users of radio a capability of communicating beyond the range of their set. It also permits cross-over from one radio net to another through a connection made in the radio central. One model—the Radio Central AN/MRC-66—has already undergone extensive field tests at the Army Electronic Proving Ground, and is now being purchased on a limited procurement plan. It will permit the individual user to tie in instantly with almost any element of Army communications systems and still retain his mobility.

Tactical Circuits

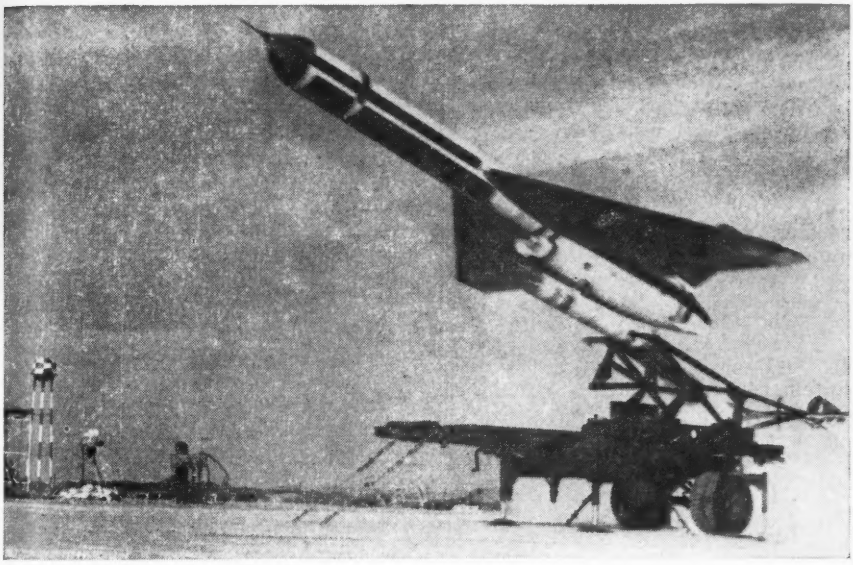
ANOTHER important area in communications is that of circuit switching. Private circuits have been authorized in tactical communications primarily because the time required for switching by manual methods has not been tolerable in a great many cases. This situation has been greatly aggravated by the ever-increasing speed of military action and counteraction—a speed which continually demands more private circuits and more equipment, with logistics repercussions which can scarcely be imagined if we look only a little way into the future.

The U.S. Army Signal Corps has come a long way toward solution of the switching bottle-neck in tactical communications. Not the least of Signal problems is the fact that it must design for mobility; Army subscribers are constantly on the move. Obviously it is easier to provide good service for customers whose office is not moved every day than for "gypsies" whose office is on four wheels.

At the Army Electronic Proving Ground, the Signal Corps will shortly be testing a prototype of a highly mobile automatic telephone exchange designed specifically for Army needs. This exchange, although small and rugged, can complete an entire switching action in a fraction of a second—a vast improvement over the present manual switchboard which requires anywhere from 30 seconds up to several minutes.

In the area of aviation and drones, special-type communication and telemetry are being developed. This will provide small, lightweight "black

New Jet Powered Reconnaissance Drone

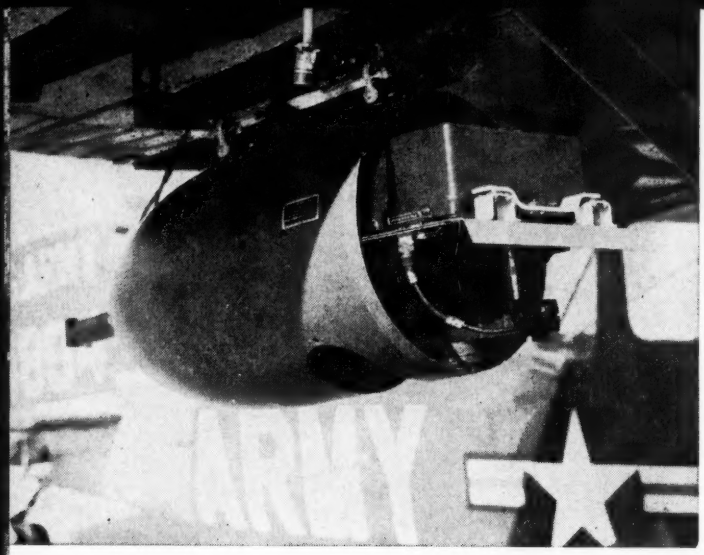


COMBINING jet air speed with modern electronics, a scouting system has been announced which will enable battlefield commanders to obtain information on enemy activity without risking a single soldier. The new system consists of advanced ground and airborne equipment and an unmanned, jet-powered combat surveillance drone which will send back information while in flight, day or night, under any weather conditions.

Capable of flying at low altitudes and high speeds, the turbo-jet drone would be difficult to stop by enemy action, especially at low altitudes. It can remain aloft for extended periods, may be recovered and re-used. It is described by Lt. Gen. Arthur G. Trudeau, Army Chief of Research and Development, as "the greatest single advance in the art of surveillance since the days of the Army frontier scout . . . modern as the Army missiles for which it will search out targets."

The new jet drone will allow field commanders to monitor enemy movements continuously and to acquire target data for firing tactical missiles against enemy troops, armor, depots or weapons batteries. It can return reports on missile firings.

Designated the AN USD-5, the drone has made successful test flights. It is being developed with the Army Signal Corps by Fairchild Engine and Airplane Corporation as one of a family of tactical surveillance systems in a general program managed by U. S. Army Combat Surveillance Agency.



Day-and-night camera KA20 is mounted in a removable wing pod using available bomb toggles on Army plane.

boxes" for realtime (immediate) transfer of information to a friendly point. Certain types of telemetry equipment now available have been reduced to approximately the size of a package of cigarettes. This also substantially reduces the power requirements to be drawn from the drone or the aircraft power.

Digesting Data

AFTER information has been observed by sensors and transmitted to a central point by way of the nerve system (communications and telemetry), it must be digested and presented to view in such a form that the commander can render quick and accurate decisions. This reduction is to be accomplished by automatic data processing machines.

A family of militarized mobile digital computers is now being developed, called the "Fieldata" family. These will range in size from very small computers to be used at the

"By its very nature, command control cannot be exercised without communications."

Long-range ground radar surveillance units mounted in trucks are designed for battle groups or battalions.

lower echelons, through larger size computers such as "BASICPAC" which will be designed to serve divisions and larger groups. The largest member of the family, called "MOBIDIC" for Mobile Digital Computer, is a general-purpose, completely transistorized computer mounted in a 30-foot van. A test of this large model is now being conducted at the U.S. Army Research and Development Laboratory.

These computers are expected to assist the commander and his staff in arriving at faster and more sound decisions. The vast amount of information received at a headquarters can be reduced by these data processing equipments and then displayed visually in the proposed tactical operations center (TOC) and administrative support operations center (ADSOC). The information also can be immediately and automatically retransmitted to other machines in routine cases.

All this does not imply that fewer communications personel will be required. The greatly increased amount of information to be collected and evaluated under modern tactical concepts will require at least the same number as in the past; however, the end product of their work will be vastly improved and more timely because of the assistance provided by the electronic data processing equipment in use.

As previously noted, one of the functions of command control is to have a capability of denying the same type of control to enemy forces. For this purpose, the Army utilizes electronic warfare devices which are designed to render ineffective enemy communications, radar scanning, VT fuses in artillery shells, and guidance in missiles. Devices have been and are being developed which can be placed in close proximity to enemy transmitters and receivers. Deliverable by aircraft, drone, artillery shell, missile, or manpack and then positioned, they will disrupt the enemy's electronic complex for the short time required by friendly forces to gain an advantage.

United Effort

THE U.S. Army Signal Corps has come a long way in its first century of improving communication methods. Electronics is rapidly becoming a way of life in the Defense Establishment, as well as in the world at large. It touches almost every segment of human endeavor.

No one has a monopoly on competence in this field. And while we in the U.S. Army Signal Corps are proud of our century of accomplishments, we take even greater pride in the fact that we are part of an increasingly strong and cohesive fraternity of electronic effort composed of all military arms and services, industry and scientific institutions. When this coordinated strength is brought to bear, no problem will block our path for long.

Aptitudes are converted into skills for defense under tutelage of the

Army Services

Lieutenant Colonel Reginald J. Hinton

DURING the past fiscal year, nearly 140,000 persons were trained as resident students in courses of the Army Service School System. Their studies ranged from Chinese-Mandarin at the Presidio of Monterey, California, to meteorology at Fort Monmouth, New Jersey. In addition, approximately 165,000 students were enrolled in non-resident correspondence courses sponsored by this same school system. Both types of training have one dominant objective—to prepare selected individuals of all components of the Army to perform those duties which they may be called upon to perform in time of war. In addition, the school

LIEUTENANT COLONEL REGINALD J. HINTON, Infantry, is School Programming Officer in the Office of the Deputy Chief of Staff for Military Operations, Department of the Army.

School System

system educates officers to perform important functions in conditions short of war which are not directly related to the wartime role.

Providing both resident and nonresident instruction is only a part of the service provided to the Army and to the Nation by the various Army Service Schools. Their additional assigned missions include:

- Initiating actions leading to the formulation of new doctrine and the revision of existing doctrine.
- Preparing training literature.
- Developing cross-service understanding of Army tactics, techniques, and operations by training members of other components of the Armed Forces; and providing common type specialist training for personnel from other services when appropriate.
- Providing support of such other training activities of the Army as directed.
- Developing organizational, operational and materiel concepts for the future.

The Army Service School System is thus an integral part of the overall organization of the Army, contributing in many ways, and on a continuing basis, toward fulfillment of the Army's missions and objectives in peace and war.

In order that this system may carry out its assigned responsibilities, the Commanding General, U.S. Continental Army Command, has been designated as the Director of the Army Service School System. He directs, controls and approves curricula and instruction in all Army service schools in accordance with Department of the Army policy except for courses of professional, medical or nonmilitary nature.

For those designated as USCONARC schools, his authority is direct to the school; for other schools, authority is through the Department of the Army or Special Staff agency or by advising other Department of the Army agencies that are proponents of the schools. The objective of this action was to relieve, to the maximum extent feasible, the Army General Staff of responsibility for operation of the schools.

In general, responsibilities parallel those assigned to the U.S. Continental Army Command with respect to the combat arms, the special fields of interest of various staff agencies, and the training and doctrinal responsibilities of the chiefs of the administrative and technical services.

Essentially, the Army Service School System is composed of the U.S. Military Academy, the U.S. Military Academy Preparatory School,

Students at the Signal School microwave course learn the fine points of trouble shooting as they work on transmitters, receivers and modulators.

two service colleges—the Army War College and the U.S. Army Command and General Staff College—nineteen branch service schools, eleven specialist schools and eleven miscellaneous schools and Department of the Army separate school courses. (*See box.*)

These schools offer approximately 625 courses of instruction in a variety of military subjects, ranging from Russian to Automatic Data Processing Systems Programming, and from a course in basic cooking to instruction in Universal Fire Control System Maintenance.

All courses exist for the sole purpose of meeting the Army's specific world-wide training requirements. Courses are established only when the training cannot be provided elsewhere, or when it cannot be accomplished more effectively or more economically in units, other Army installations, or in civilian institutions.

Of the approximately 30,000 students enrolled in resident courses at any one time in an average year, about 70 percent are members of the active Army. The remaining 30 percent come from the reserve components, the sister services, foreign allies, and civilian personnel of the Armed Forces or other Federal agencies. The majority of the active Army input consists of personnel who have just completed eight weeks of basic combat training in Army Training Centers.

The number and type of training courses offered are the result of a painstaking and detailed process. First, the number of Military Occupational Specialists (MOS) necessary to meet the current needs of the Army is established. This compilation is based on the currently authorized structure of the Army with consideration being given to planned activations, inactivations, and reorganizations. It establishes the quantitative needs of the Army by specific MOS and becomes the basis for determining actual training needs.

After due allowance for the number of personnel holding a specific MOS, as well as anticipated reenlistment gains, normal attrition and expiration of term of service losses, a projection is developed of how many personnel must be trained to meet strength requirements in that particular MOS for the current fiscal year. In addition, projections for the two ensuing fiscal years are developed and refined by the same process.

U.S. ARMY SERVICE SCHOOLS AND DEPARTMENT OF THE ARMY SEPARATE SCHOOL COURSES

Military Academy

U.S. Military Academy, West Point, New York.

Preparatory School

U.S. Military Academy Preparatory School, Fort Belvoir, Virginia.

Service Colleges

U.S. Army War College, Carlisle Barracks, Pennsylvania.
U.S. Army Command and General Staff College, Fort Leavenworth, Kansas.

Branch Service Schools

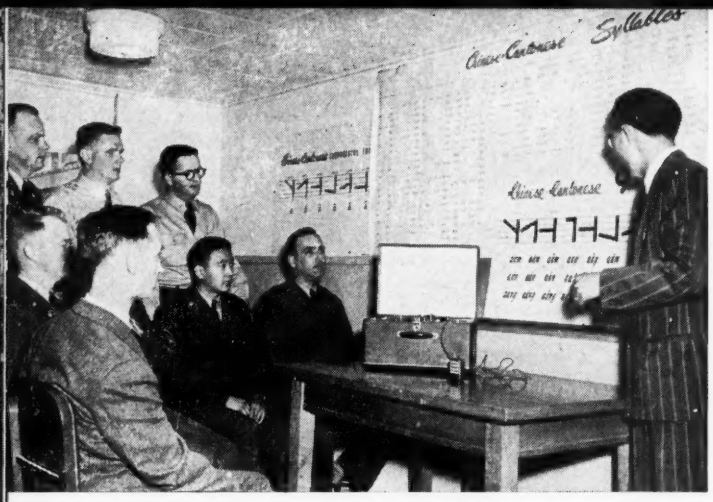
The Adjutant General's School, U.S. Army, Fort Benjamin Harrison, Indiana.
U.S. Army Armor School, Fort Knox, Kentucky.
Army Medical Service School, Fort Sam Houston, Texas.
U.S. Army Air Defense School, Fort Bliss, Texas.
U.S. Army Artillery and Missile School, Fort Sill, Oklahoma.
U.S. Army Chaplain School, Fort Slocum, New York.
U.S. Army Chemical Corps School, Fort McClellan, Alabama.
U.S. Army Engineer School, Fort Belvoir, Virginia.
Finance School, U.S. Army, Fort Benjamin Harrison, Indiana.
U.S. Army Infantry School, Fort Benning, Georgia.
The Judge Advocate General's School, U.S. Army, Charlottesville, Virginia.
U.S. Army Ordnance School, Aberdeen Proving Ground, Maryland.
U.S. Army Ordnance Guided Missile School, Huntsville, Alabama.
The Provost Marshal General's School, U.S. Army, Fort Gordon, Georgia.
U.S. Army Quartermaster School, Fort Lee, Virginia.
U.S. Army Signal School, Fort Monmouth, New Jersey.
U.S. Army Southeastern Signal School, Fort Gordon, Georgia.
U.S. Army Transportation School, Fort Eustis, Virginia.
U.S. Women's Army Corps School, Fort McClellan, Alabama.

Specialist Schools

U.S. Army Security Agency School, Fort Devens, Massachusetts.
U.S. Army Civil Affairs School, Fort Gordon, Georgia.
U.S. Army Aviation School, Fort Rucker, Alabama.
U.S. Army Information School, Fort Slocum, New York.
U.S. Army Intelligence School, Fort Holabird, Maryland.
U.S. Army Language School, Presidio of Monterey, California.
U.S. Army Logistics Management Center, Fort Lee, Virginia.
U.S. Army Medical Service Meat and Dairy Hygiene School, Chicago, Illinois.
U.S. Army Management School, Fort Belvoir, Virginia.
U.S. Army Special Warfare School, Fort Bragg, North Carolina.
U.S. Army Strategic Intelligence School, Washington, D. C.

Miscellaneous Schools and Department of the Army Separate School Courses

Army Primary Helicopter Training, Camp Wolters, Texas.
U.S. Army Medical Optical and Maintenance Activity, St. Louis, Missouri.
Walter Reed Army Institute of Research, Washington, D. C.
CBR Weapons Orientation Course, Dugway Proving Ground, Utah.
Granite City Engineer Depot, Granite City, Illinois.
Springfield Armory, Springfield, Massachusetts.
Joint Military Packaging Course, Rossford Ordnance Depot, Toledo, Ohio.
Fitzsimons General Hospital, Denver, Colorado.
Letterman General Hospital, San Francisco, California.
Brooke General Hospital, Fort Sam Houston, Texas.
Walter Reed Army Medical Center, Washington, D. C.



Tape recorder assists in teaching the tones that make Chinese language difficult for occidentals to master.

Selecting Students

PERSONNEL selected to receive school training must be carefully screened to insure that they have the ability to complete the prescribed instruction. Because the school workload must be programmed as evenly as possible throughout the 50-week academic year, it sometimes becomes a problem to find qualified personnel available for assignment to coincide with the convening date of a scheduled class.

Post-induction testing is used to determine the aptitudes of newly enlisted or inducted personnel. Many of these young men may possess abilities in several fields. Whenever possible, they are selected and assigned to an area of their choice.

In this connection, two programs have been established which permit a measure of choice as to type of training and eventual assignment.

Under provisions of AR 601-230, high school graduates may enlist for specific Army schooling. This applies not only to high school graduates without prior service enlisting from civilian life, but also to high school graduates who have had prior service in any of the other Armed Services, or who have been separated from the Army for more than 90 days.

In tests administered *prior* to enlistment, the high school graduate must attain three aptitude area scores of 90 or higher on the Army Classification Battery and a qualifying score in the aptitude area appropriate to the course of his choice. Besides meeting the prerequisites, the applicant must enlist for 3, 4, 5, or 6 years.

If the applicant meets all these qualifications, a quota for his chosen course is reserved to coincide with completion of his basic training. Under this procedure, both the desire of the individual and the needs of the Army are satisfied.

Under a similar program, as provided in AR 601-25, somewhat the same procedures are followed in reenlistment of in-service personnel.

Program Planning

IN programming school training requirements, the commander also has a voice. In September of each year, the Commanding General, U.S. Continental Army Comand, forwards a letter to all Major Continental United States Commands and agencies that normally have an interest in school training for personnel under their jurisdiction. These commanders are asked to indicate the number of spaces required for each officer and enlisted course to be conducted in the ensuing fiscal year.

By this means, the Deputy Chief of Staff for Personnel, Officers As-

Tactical chart proves valuable in outlining concepts of artillery supporting fires problem staged for Inter-American Defense Board at Fort Benning.

signment Directorate, can make known his requirements for officer career training; Army Commanders may state their requirements for initial training for newly commissioned second lieutenants; the Deputy Chief of Staff for Military Operations may state his training requirements for our foreign allies; the Chief of the National Guard Bureau and the Assistant Chief of Staff for Reserve Components may state their needs for the reserve components. All interested commands and agencies, including the sister services, are thus given the opportunity to state their specific Army service school training requirements.

After total requirements have been determined, each school is directed to develop a schedule to accommodate the required training, with due allowance for such factors as availability of funds, instructional staffs, classroom facilities and training sites, student housing and transportation.

When all class schedules have been approved by the Commanding General, U.S. Continental Army Command, a consolidated schedule is published and distributed to all interested commands and agencies. Quotas are allocated by course and by specific class for the fiscal year.

Developing Doctrine

IN A variety of ways, service school instruction is closely tied in with the formulation of new or the revision of old doctrine.

As each new piece of equipment is introduced into the Army, as each change in organization is effected, as new overall concepts of employment of major forces are developed or as other changes occur, it becomes the responsibility of the separate schools to provide necessary instruction on

Typical of the many foreign students who are trained in the System, this group of Vietnamese officers enters Infantry School.

new items of equipment, and to develop doctrine and techniques relative to the organization of allied units.

This requires a vast amount of coordination among the schools themselves, the combat arms, the respective technical and administrative services, and the U.S. Continental Army Command. Often instruction must be conducted on equipment presently in Army units while, at the same time, the school staffs are developing programs of instruction and teaching subjects pertaining to new equipment coming into the Army's inventory.

To add to the workload, there is a continuing requirement to train newly assigned instructors in teaching techniques. Programs and methods of instruction are constantly reviewed to insure that essential training is provided in an efficient and economical manner. The latest training aids —including closed circuit TV—are used to impart the maximum amount of useful and pertinent information in the shortest possible time.

Training Literature

CLOSELY allied to the development of doctrine and technique is another function and responsibility of the various service schools—the preparation of training literature.

Changes in Army equipment, doctrine, and technique automatically create a need to revise field manuals,

SUPPLEMENTING the Service School System, the various arms and branch schools, such as Infantry, Armor, Artillery, conduct both resident and non-resident courses designed for technical training or to advance Active Army and Reserve personnel in their tactical fields.

Typical is the U.S. Army Infantry School at Fort Benning where some 290,000 students from every state, the Canal Zone, Puerto Rico and oversea points are enrolled in courses administered by the Non-Resident Instruction Department. All instructional material used at The Infantry School is prepared for use in support of five non-resident programs—Reserve Officers Training Corps, National Guard State Officers Candidate Schools, U.S. Army Reserve Schools (Infantry) Staff Training Program, and the portion of the Army Extension Course Program for which The Infantry School is responsible. The Infantry School also has responsibility for five Army extension courses—Army pre-commission, noncommissioned officers leadership, Infantry company officers, Infantry officers advanced, and Infantry officer refresher courses.

The Department of Non-Resident Instruction daily ships an average of from 1,400 to 1,700 pounds of mail—lessons, examinations, maps, overlays, field manuals, special texts and other references —to students and instructors throughout the world.

Each week the department grades approximately 10,125 lessons. It corresponds with each student, advising him as to the course he should pursue, apprising him of his progress and answering questions that might arise in connection with his work.

texts and instructional materials used in both resident and non-resident courses. These documents are used not only by the schools themselves; they also provide the basis for training by the Army in the field.

The majority of Army service schools are assigned responsibility for specific Army field manuals and training texts. All training literature within their field is subjected to continuing review and revision.

Frequently documents must be completely rewritten, or entirely new documents prepared. Then, too, there is a need to review documents prepared by other schools to insure consistency and uniformity in overall doctrine and technique.

Inter-Service Cooperation

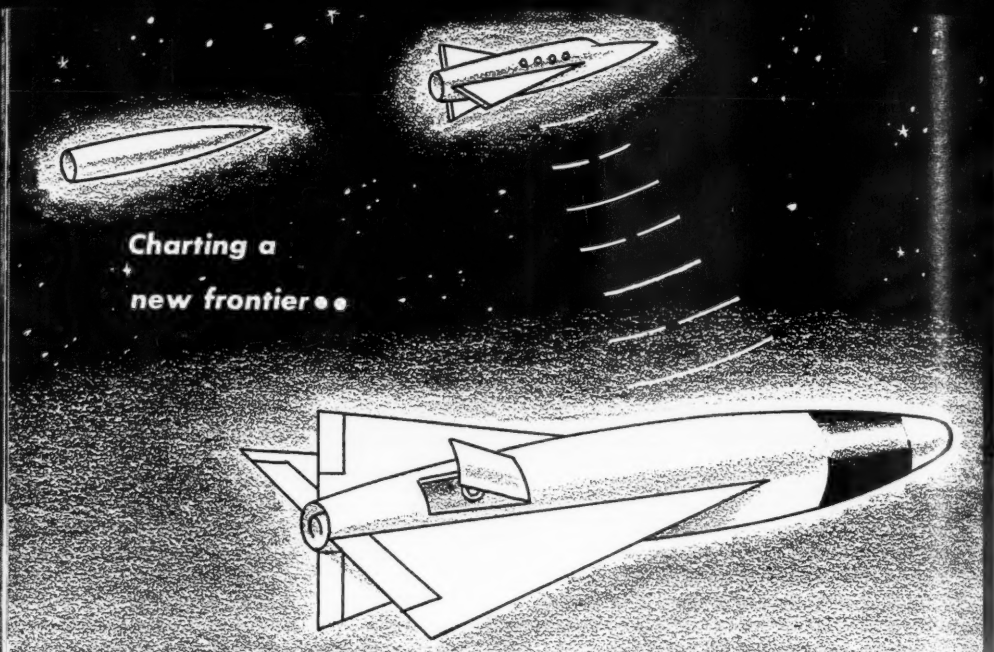
IN addition to training its own officer and enlisted personnel, Army service schools provide training for personnel from other services, and other departments of the Federal Government. During the last fiscal year, for example, the Army provided basic cook training for approximately 800 Air Force cooks.

In addition, the various Army service schools are called upon to conduct special briefings and demonstrations, such as the Joint Civilian Orientation Conference at The Infantry School, and the preparation of special studies of vital interest to the Army as a whole.

To accomplish all these functions, proportionate resources of manpower, funds, facilities are required. The results have proven eminently worthwhile in maintaining the combat readiness of the Army.

As Dwight D. Eisenhower pointed out when he was Army Chief of Staff, "No investment by the American Government has returned such tremendous dividends as the amount of money spent on the Army School System during the years between the two world wars."

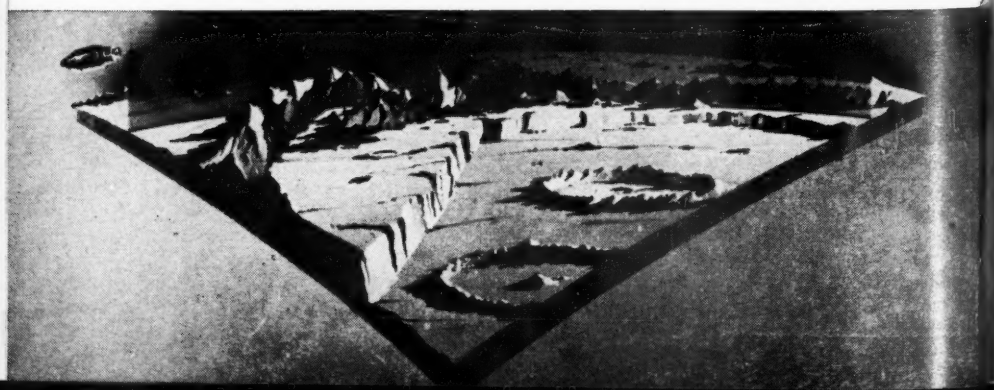
Modern buildings, like Larkin Hall at Quartermaster School, Fort Lee, Virginia, are provided at many schools in Army system, comparable to civilian institutions.

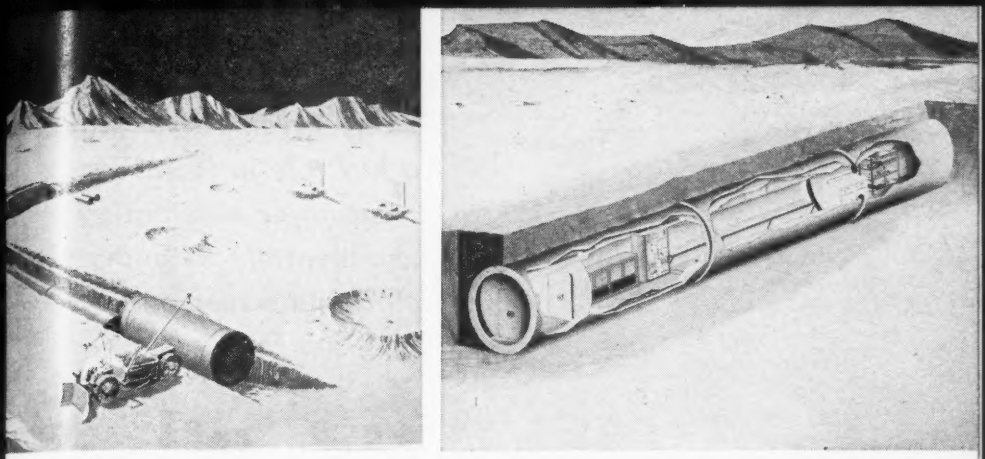


Engineers Study Lunar Landing Sites

WHEN the first American makes the first landing on the Moon, the terrain won't be entirely strange—for a study of the surface now has been prepared for the Army Chief of Engineers. This first photographic study of the surface of the moon was made by the Military Geology Branch of the U.S. Geological Survey of the Interior Department, and has been published by the Corps of Engineers under the title "Engineer Special Study

Future stages of lunar exploration would provide maps by surveying the moon with radar from space vehicle. Later surveys also would be made by camera and TV.





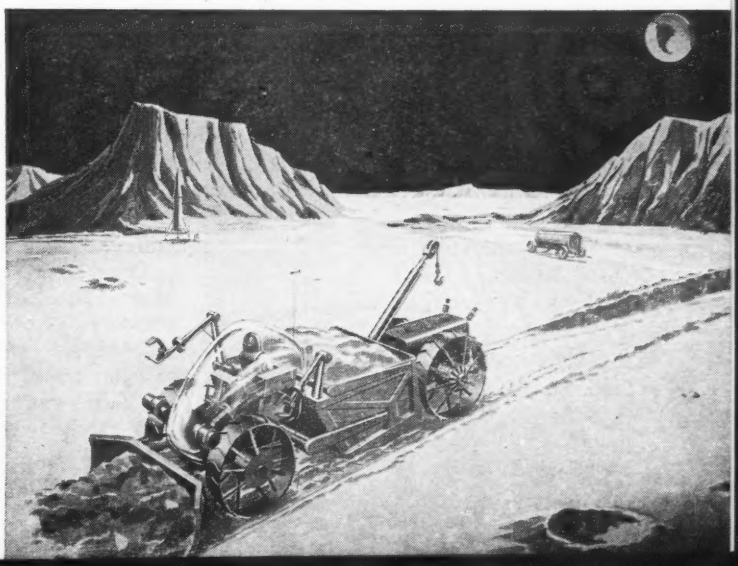
Artist's concept shows prefabricated modules, each transported by own cargo rocket, being installed, left, while at right one is buried below surface of the moon.

of the Surface of the Moon."

The study consists of three diagrams showing the visible face of the moon at a diameter of 36 inches. One diagram shows the physiographic regions, each named and outlined. A second is a generalized photogeologic map, showing relative age of craters and maria, structural features such as fracture patterns, faults, anticlines and monoclines. An accompanying scale, compensated for the curvature of the moon, permits measurement of distances and topographic features. The third diagram depicts the "lunar rays" which are interpreted as splashes of crushed rock caused when meteors struck the surface.

A text accompanying the diagrams describes the various regions and provides information on reliefs and slopes. Interpretations are made of the probable composition and texture of surface material, and its bearing strength. The study was planned for use in selection of landing sites on the moon; it also will aid in designing telemetering instruments and a lunar surface vehicle.

Illustrated here is artist's concept of lunar base construction as envisioned by planners of the Corps of Engineers.



Multipurpose vehicle would perform heavy construction tasks of installing module for early lunar base.

FOREWORD

DURING the period 30 June 1956 through 30 June 1960, four of the Army's five disciplinary barracks were closed. During the same period, AWOL rates declined from 55 per thousand, to 36 per thousand, and the rate of general court-martial offenses dropped from 7.2 per thousand to 2.4 per thousand. The Army thus has been able to save untold hours of training time which formerly were wasted on inept men, and to concentrate its efforts on troops who are devoting full time to the soldier's task.

These results reflect the cumulative impact of an Army program consisting of (1) preinduction screening to reject individuals without aptitude for training, (2) positive training in moral character development for all personnel, (3) identification, guidance and rehabilitation of first-time military offenders through the efforts of chaplain, psychiatrist, and provost marshal, and (4) elimination of chronic offenders and marginal persons unable to meet performance standards.

Aspects of this problem have been discussed in past issues—the Provost Marshal's role in "More Effective Manpower Through Improved Discipline," March 1959 DIGEST, and the Chaplain's contribution in the "Character Guidance Program," October 1959 DIGEST.

In the following article, Major James J. Gibbs, until recently Assistant Chief Psychiatry Consultant in the Office of the Surgeon General, discusses the role of the psychiatrist in the early detection and rehabilitation of offenders.

—Editor.

Army psychiatrists play a key role in identifying, treating or eliminating the mentally ill under the stockade screening program for

Handling the Military Offender

A FEW years ago it was common to see stockade prisoners with armed guards in the waiting room of the Mental Hygiene Consultation Service or other outpatient psychiatric facilities. Prisoners accompanied by armed guards might frequently be seen in the emergency room at night because of suicide gestures, temper outbursts, or aggressive, rage-like behavior. In addition, there were always prisoner patients in the hospital, necessitating separate prison wards with extra guards and ward personnel.

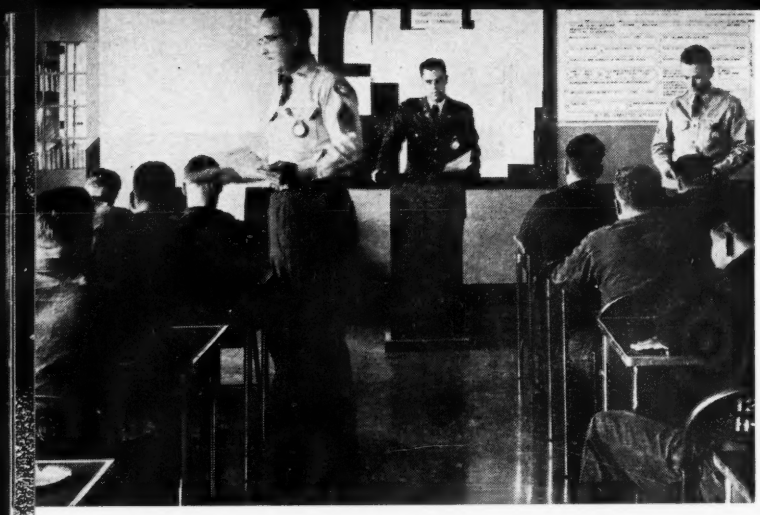
Once in the hospital for psychiatric observation and treatment, these prisoners often overtly and covertly resisted any attempt to return them to the stockade. Sick call in the stockade was an all-morning affair, and rarely were the complaints of

Major James J. Gibbs

more than minor nature. To make matters worse, the same individuals were often repeaters in one of the above situations.

Under such circumstances, the psychiatrist's role was largely to "put out fires." An air of urgency seemed to prevail, and neither the confinement officer or psychiatrist really had control of the situation. Although the stockade was extremely expensive to operate, rehabilitation on many posts was so modest that, once an individual was confined, there was a good possibility that he would eventually receive less than an honorable discharge. The magnitude of the problem was evident in the fact that

MAJOR JAMES J. GIBBS, Medical Corps, was formerly Assistant Chief Psychiatry and Neurology Consultant, Office of the Surgeon General. He is currently on duty at Walter Reed General Hospital.



New prisoners at disciplinary barracks get orientation on working of the Psychology and Neurology Sections.

in 1956, the average number of Army prisoners in stockades and disciplinary barracks roughly approximated the average daily beds occupied by Army patients world-wide.

From this state of unrest and frustration evolved what is now called the "Stockade Screening Program." Beginning in September 1957, Army Regulations established this program as part of an organized effort to make the stockade a rehabilitation center rather than what it had been—a place to isolate offenders and a source of free labor.

The Mental Hygiene Consultation Service—a community psychiatric clinic located on all Army posts of any size in the United States, and numbering on its staff psychiatrists, psychologists and social workers—was a logical agency to participate in this program. MHCS is especially concerned with behavioral responses which interfere with the fulfillment of the military mission. Although not experts in penology, the psychiatrist and his staff possess knowledge of human behavior and interactions which qualify them as valuable advisers of the confinement officer.

From a medical point of view the objectives of the Stockade Screening Program are five-fold—

1. To provide a working relationship between the MHCS and the confinement personnel so as to develop an adequate procedure for handling cases which might become unnecessarily hospitalized.

2. To screen all admissions to the stockade and sort out those who are clearly without rehabilitation potential, for separation through administrative channels.

3. To screen out the mentally defective, the psychotic and others who have found their way into confinement.

4. To identify and find a means of disposing of individuals whose homosexuality, drug addiction or alcoholism clearly make impossible effective military service and whose presence within the stockade tends to lead to disorder and serious incidents.

5. To provide a means of implementing and maintaining a rehabilitation procedure for those who have such a potential. This is possible only through cooperative efforts of command, confinement and medical agencies.

Therapy—Stockade

THE stockade serves the specific purpose of imposing controls upon individuals who have indicated by their behavior that they will not or cannot control themselves. As such, it is an institution that a military organization cannot as yet completely

do without. Experience has shown that if the psychiatrist and his staff are to be of value to the confinement officer and also achieve therapeutic results with prisoners, they must actually work in the stockade and avoid the pitfall of being an esoteric, over-critical outside agency.

To avoid the possibility of the prisoner losing contact with his unit, Army Regulations specifically encourage periodic visitations by the unit commander or his representative. The confinement officer keeps the unit commander informed about the prisoner's progress in retraining and treatment.

While in the stockade, the prisoner is managed in such a way as to promote his understanding of what is expected of him, and he is given the opportunity to conform to reasonable activities and socially-acceptable restrictions. Insofar as possible, discipline is demanded without a further loss of dignity and individuality. His time is occupied by constructive activities, and he is placed on an installation parole status as soon as possible.

Return to duty does not come about precipitously; rather it is a planned move between the confinement officer, unit commander and MHCS. After the soldier's return to duty, MHCS maintains contact with those individuals who require it or desire it.

The Non-Effective Soldier

ROUTINE evaluation of prisoners confined in the stockade has provided much valuable data and has confirmed much of what had previously been just impressions. Non-effective soldiers, whether they be military offenders, persistent sick book riders, psychiatric patients, or washouts from an Army school, when compared to the Army as a whole are predominantly between the ages of 17 and 20. They have a modest intellectual endowment, and their civilian backgrounds indicate fewer social and economic advantages.

They have had less formal education. It would seem that family relationships were not close or congenial, and very likely parental guidance was lacking when it was most necessary—during the developmental years. Even before coming into the Army these individuals probably displayed aggressive and impulsive behavior, escapist tendencies in the face of difficulties, satisfaction with short-term goals, and a remarkable ability to blame others for their misdeeds and failures.

Although the confinement rate has decreased considerably, Army psychiatrists have learned as a result of the Stockade Screening Program that by the time many offenders had reached the stockade they were no longer motivated to stay in the Army. For some, this was just a reflection of their temporary hostility toward the Army because of the current confinement and as such was an attitude amenable to change.

Others, however, had reached the point of no return. They would not perform as soldiers and had already been labeled by the military community as undesirable and unsuitable. Retraining, group or psychotherapy could reach but few of these people.

Accordingly, it seemed logical to concentrate Army psychiatric efforts at a still earlier phase of maladjustment. During the past year, a First Court-Martial Screening Program has been established on many posts within continental United States. The objective of such a program is to provide command with a psychiatric evaluation of the military potential and motivation of each offender at the time of his first court-martial without confinement. It does not interfere with the timing or proceedings of the court-martial unless, of course, an individual is found to be mentally incompetent.

While it is too soon to report any

results, the Program does represent a further step in the right direction. In essence, it seeks to identify as many maladjusted soldiers as possible before they truly become military offenders. Once identified before their attitudes and behavior have become rigid and fixed, there is a possibility that they can be helped to become effective members of a military organization.

The operation of a program with such seemingly optimistic objectives calls for close coordination and cooperation among various agencies in the chain of command, as well as the surgeon, chaplain, provost marshal, and judge advocate, whether they be on a military post or in the Department of the Army. Regardless of how meticulously such a program is set up and the strength of command support accorded in official directives, its satisfactory operation depends on the enthusiasm, understanding and attitudes of the community leaders involved. Someone must always oversee or monitor what is transpiring, and usually this is a role assumed by the psychiatrist.

New Concepts

ALREADY the psychiatrist has become dissatisfied with many of his long-treasured concepts about emotional disorders and deviant behavior associated with maladjustment in the military service. It has been cus-

As a Chaplain sees it—

Leading Problem Soldiers

Chaplain (First Lieutenant) William J. Hughes

WHY does a top PFC go sour and become a trouble maker after he has been shifted from a gun section to survey?

Why does one company's morale go up on a field problem while only gripes come from another?

To all who regularly work with men as commanders, section leaders or staff specialists, such questions are constantly arising and the only way to answer them is to keep thinking, looking and listening, and studying men.

The best commander is the man who understands his men—how to ascertain their problems, how to motivate them, how and when to discipline them. Without such knowledge and understanding, the problems that arise will confuse and bewilder a man of less ability.

But more is needed. The good commander also must know what resources are available to him for helping his men. There is the Army Emergency Relief and the Red Cross to help in financial crises. There are psychiatrists and normal medical channels when a man appears to be getting emotionally off balance. There is the Judge Advocate General to be called on to assist in legal matters. And then there is the Chaplain if it appears to be a religious problem.

Besides these official sources of aid, there are unofficial sources. Is a man apparently having trouble at home? Then another soldier and his wife who are well-adjusted and happy can be asked to help unobtrusively. Is another man drinking too much? He may be encouraged to participate in some wholesome activities. Are personnel relations at a low ebb in one squad room? Then perhaps moving one man may solve the problem.

CHAPLAIN (FIRST LIEUTENANT) WILLIAM J. HUGHES is Group Chaplain, Headquarters, 42d Artillery Group.

tomary for the psychiatrist to view adult behavior as largely determined by childhood events, relationships and influences. Now, there is reason to question seriously the finality of such a concept.

An individual's current reference group may be equally as important in determining his behavior today or tomorrow. This has been proven over and over again in combat when an inadequate, overly-dependent individual has functioned effectively as a result of the strength and support he received from his infantry squad. Perhaps many of our military offenders can likewise gain external control from the environment to compensate for their lack of inner control so that they can more easily conform to the rules and regulations of the military society.

Based on his own experience, one of the Army's psychiatrists, Captain S. David Kahn, believes that the image the military offender has of the Army is an important factor in determining how he will function in the future. If the Army is viewed as a tough adversary, eager to fight and punish, the soldier who must resist authority to maintain his own sense of personal security and comfort will accept the challenge and fight to get out of the Army. Even though he may ultimately receive an undesirable discharge, he feels that he has bested a worthy opponent.

In attempting to solve personnel problems, to help us be more effective and efficient in this area of our work, five rules are important:

First, we must have understanding. To have this we must know people. Every person is an individual and what works on one may ruin another.

Second, the good commander will utilize both the official and unofficial resources at his disposal.

Third, timing is essential. When a soldier starts downhill is the time to stop the descent. To kick him after he hits bottom may be justice but it usually also indicates poor leadership. Quick action in referring problems to specialists will often be reflected in a higher percentage of success. A family problem that is beginning to rear its ugly head should be reported to the Chaplain. This may save both a home and a soldier who otherwise might fall apart later. Financial problems also need prompt handling. The only thing that extra time and delays do to a bad debt is to increase both interest and correspondence.

Fourth, when efforts at rehabilitation have failed, prompt action is necessary. There is no reason why we must wait for a man to accumulate enough punishments to make a board action obvious. The logical thing is to take such action before he does his damage both to himself and to the Army. As soon as it is realized that a man is not going to be able to adjust to military life, prompt action should be taken.

Finally, remember that each problem case is an individual and must be handled from two standpoints—what is best for the Army and what is best for the man.

The good commander is a man who handles his men with understanding, consideration, fairness and firmness. To become such a person we must continually study people. Then, we must study our situation and explore the resources available for help. After this, if we act promptly, fairly and wisely, we will be doing a better job.

The suggestions made here may help to handle the area of problem soldiers, or soldiers with problems, more successfully. The results should be reflected in straightened lives, stronger character, and better soldiers.

On the other hand, if the Army appears primarily to be concerned with separating the men from the boys, repeated offenses then reflect weakness, immaturity and inadequacy rather than prowess. Under these circumstances he has seen individuals who previously were fighting to get out of the Army fighting just as hard to stay in.

Early Identification

ONE may ask—why not screen out prior to induction or enlistment those individuals who will later become military offenders? This has never been successfully realized in a military organization which requires a large manpower pool because too many people are rejected who could function adequately if given the opportunity.

Intelligence and educational level have been the most reliable criteria in predicting overall military performance. Currently, with the mental standards required to enter active service, both factors are operative. Even if there were a social prediction table to identify potential military delinquents, the gathering of accurate data on motivation, environmental circumstances and the like, which enter into the predictive factors, would be an insurmountable task.

It is, therefore, more practical to rely upon actual deviancy while in the relevant situation as an indication that an individual should be eliminated or given special management. If this approach is to be economical and just, early identification is a necessity. Once identified, the problem is then to determine whether the individual's overall adaption to life can be modified sufficiently so that he can meet the functional demands of the organization—within a reasonable expenditure of time and professional effort consistent with the mission of the Army. It is believed that as we become more cognizant of the social forces, attitudes and values which are operative in the military environment and less preoccupied with importance of the personal history of individual prisoners or patients, we will be more successful in rehabilitating offenders for effective service.

Theoretical Basis

WHAT Army psychiatrists are trying to achieve with the military offender and other groups of marginal personnel has a theoretical basis. The "Crisis Theory" as derived by Dr. Gerald Caplan and his associates at the Harvard School of Public Health probably offers the best explanation of what we are doing.

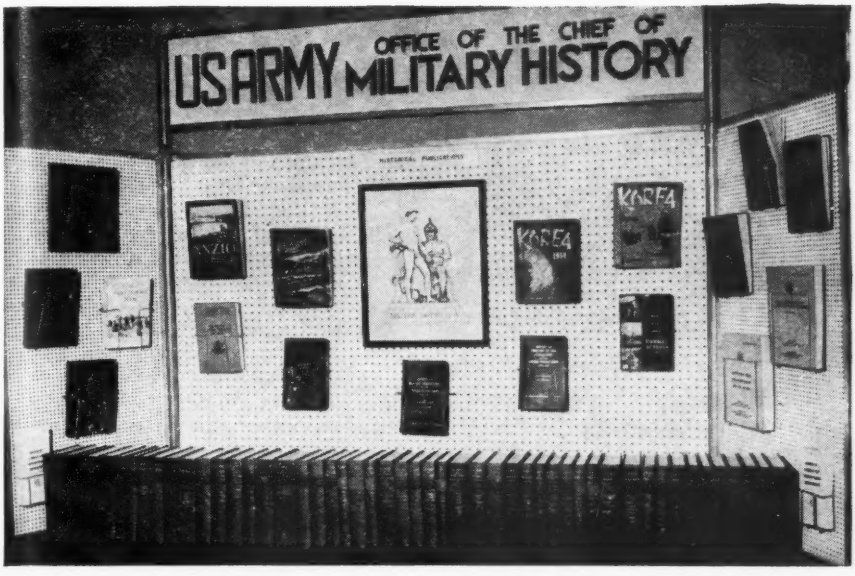
Briefly, this theory approaches the problem of psychopathology at a community level. Every individual has a position of equilibrium on a scale which has optimal mental health at one pole and mental ill health at the opposite pole. All of us face problems in daily living which threaten our well-being; but as a rule, except for a transient period of upset, we return to our former position of equilibrium on the scale.

If an individual faces a problem which he cannot resolve by his customary problem-solving methods, a more lengthy period of emotional disturbance may result which is referred to as a crisis. Eventually, the individual finds a solution and the crisis is no longer evident.

However, if the solution is an undesirable one, such as excessive drinking, his position on the scale has moved in the direction of mental ill health and future problems become increasingly more difficult to resolve. The outcome of a crisis thus significantly depends upon what transpires between the individual and the important people in his environment.

It is here that the Army psychiatrist —in his role as overseer and monitor —can contribute to rehabilitation of the individual offender and thus to the overall effectiveness of the military unit.

Army Historical Series Reaches Fifty Volumes



WITH publication of the latest volume in the series "United States Army in World War II," the Army's gigantic cooperative effort in writing the narrative history of that conflict has reached the impressive total of fifty volumes in print. Published by the Office of the Chief of Military History (OCMH), the fiftieth volume is entitled *Campaign in the Marianas*. The book, written by Dr. Philip A. Crowl, Navy veteran now serving with the State Department, describes the operations leading to the capture of Saipan, Tinian, and Guam in the Central Pacific.

The Army's contribution to the Nation's history, both as participant and as objective preserver of the historical record, has gone on display in the Smithsonian Institution and in the concourse of the Pentagon. The exhibit includes paintings from the War Art Collection, unit lineage and honors missions of the Office, Chief of Military History, and a screening of the Army *Big Picture* program, "Operation Cartwheel."

To date, OCMH-prepared volumes on World War II subjects total 27,000 pages. The multivolume series consists of a number of subseries—The War Department, the Army Air Forces, the Army Ground Forces, The Army Service Forces, The Western Hemisphere, The War in the Pacific, The European Theater of Operations, The Mediterranean Theater of Operations, The Middle East Theater, The China-Burma-India Theater, The Technical Services, Special Studies, and Pictorial Record.

The following volumes—not including those on the Army Air Forces issued by the University of Chicago Press—have already been published. Copies may be purchased at the price indicated from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.

The War Department
- Chief of Staff: Prewar Plans and Preparation, $4.25
- Washington Command Post: The Operations Division, $3.75
- Strategic Planning for Coalition Warfare: 1941-1942, $3.75
- Strategic Planning for Coalition Warfare: 1943-1944, $5
- Global Logistics and Strategy: 1940-1943, $6.25
- The Army and Economic Mobilization, $5.25
- The Army and Industrial Manpower, $2.75

The Army Ground Forces
- The Organization of Ground Combat Troops, $3.25
- The Procurement and Training of Ground Combat Troops, $5.25

The Army Service Forces
- The Organization and Role of the Army Service Forces, $4.25

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- The Framework of Hemisphere Defense, $4.25

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- Okinawa: The Last Battle, $8.50
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- The Lorraine Campaign, $11
- Cross-Channel Attack, $6.75
- Logistical Support of the Armies, Volume I, $4.50
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- Northwest Africa: Seizing the Initiative in the West, $7.75

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- The Persian Corridor and Aid to Russia, $4

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- Stilwell's Command Problems, $6.25
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- The Quartermaster Corps: Organization, Supply, and Services, Volume I, $3.75
- The Quartermaster Corps: Organization, Supply, and Services, Volume II, $4
- The Quartermaster Corps: Operations in the War Against Japan, $4
- The Ordnance Department: Planning Munitions for War, $4.25
- The Signal Corps: The Emergency, $3.50
- The Signal Corps: The Test, $4.50
- The Medical Department: Hospitalization and Evacuation, Zone of Interior, $4
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Special Studies
- Three Battles: Arnaville, Altuzzo, and Schmidt, $4.50
- The Women's Army Corps, $6.25
- Rearming the French, $4.25
- Chronology: 1941-1945, $4.75
- Military Relations Between the United States and Canada: 1939-1945, $5

Pictorial Record
- The War Against Germany and Italy: Mediterranean and Adjacent Areas, $4
- The War Against Germany: Europe and Adjacent Areas, $3.75
- The War Against Japan, $4

NEWS of professional interest

Combustible Ammo Casing

A new casing for Army ammunition provides for complete combustion of the cartridge case when fired. The casing—composed of a classified material—was designed primarily for use in tank guns, and testing now is being carried out for other artillery weapons. Ultimate aim is use in all Army guns.

The combustible case eliminates need for expensive brass shell cases and lightens weight. In tanks it helps solve two problems—the litter of hot spent cases on the fighting compartment floor and noxious gases released inside the turret.

Work on the new shell case, which was tested following five years of extensive research and engineering, was done cooperatively by the Army Ordnance Corps and industry. Bulk of this work was at Picatinny Arsenal, Dover, New Jersey, the Armour Research Foundation in Chicago, and the Ballistics Research Laboratory at Aberdeen Proving Ground, Maryland.

Operation Searchlight

Records set in previous years were broken during Operation Searchlight, the Department of Army suggestion program for Fiscal Year 1960. Objective of the program was 250 suggestions for every 1,000 U.S. citizen employees—but when figures were tabulated more than 94,000 suggestions had been submitted to establish a rate of 269 per 1,000. Of those submitted, 23,306, or 24.8 percent, were adopted to produce an estimated first-year savings of more than $15,000,000. Cash awards paid for suggestions amounted to $573,883.

Under-Ice Reservoir

Storing of 30,000 gallons of diesel oil in a huge ice reservoir 100 feet under surface of the Greenland Ice Cap is being tested as a possible solution to fuel storage problems in the Arctic. An initial test was conducted by the Army Corps of Engineers in 1957 when a small pit was cut and aviation gasoline stored in it. Almost a year later, it was found that none of the gasoline had evaporated. The diesel oil now being stored in the larger pit will be used to provide heating and other utility needs for the Army Engineer Research and Development Detachment which will be housed and work in the confines of the ice tunnel.

Satellite Progress

Summarizing the three-year period since the first Soviet Sputnik went into orbit on 4 October 1957 until October 1960, the Department of Defense points out that the Soviets successfully launched a total of six artificial earth satellites of which only Sputnik IV still is in orbit. During the same period, the United States put up a total of 25 satellites successfully, of which 15 are still aloft and 7 are still transmitting data to earth. Of 15 launchings from Cape Canaveral, the Army participated in seven. The other 10 were launched from the Pacific Range at Vandenberg Air Force Base, California.

Signal Specialists Sought

The Army Signal Corps is experiencing a shortage of officers in the automatic data processing, photographic and television fields. Officers qualified in these fields and interested in transferring to the Signal Corps may obtain information by writing to the Personnel and Training Division, Office of the Chief Signal Officer, Department of the Army, Washington 25, D. C.

VTOL Program

Establishment has been announced of a joint tri-service program directed toward developing a prototype of an operational vertical take-off and landing

(VTOL) transport aircraft for testing. The Director of Research and Development, Department of the Army, and the Assistant Secretaries for Research and Development of the Departments of the Navy and the Air Force are conducting the program, with the Navy designated to conduct the joint development. Although several projects in the field have been conducted by all the services, all were strictly test and evaluation aircraft and were never produced in quantity. From such work has come much technical information on the potential of VTOL aircraft.

Map-Making Process

Designed to reproduce colored maps, a printing machine using an electrostatic process is under development by the U.S. Army Engineer Geodesy, Intelligence and Mapping Research and Development Agency, Fort Belvoir, Virginia. Electrostatic printing is a new method based on the fundamental phenomenon of the mutual attraction between particles having an opposite electrical charge. A photo-conductive coating applied to paper has the unique property of being an insulator in the dark and a conductor in the light. When combined, these phenomena result in the basic fundamentals required for the new process.

Built by the Radio Corporation of America, the experimental machine is now essentially a single color model but studies and tests are expected to lead to development of a five-color printing machine. The new process eliminates need for plate making since it can reproduce maps directly from miniature separation transparencies.

Distaff Hall

Construction has begun on a $3.5 million, 300-unit building in the Rock Creek Park section of Washington, D. C. to be known as Army Distaff Hall, a residence for widows of Army officers. Funds were raised by Army Wives Clubs throughout the world, and by contributions from business and industry to the Army Distaff Foundation, Inc., a non-profit organization incorporated in the District of Columbia. It is the first home planned by one of the military services to help care for elderly female dependents. Lieutenant General Leslie R. Groves, USA-Ret., is President of the Foundation.

Electronic Storm Detector

Detecting lightning discharges from long distances to trace centers of severe weather now is accomplished by a rapid weather-observing system developed by the Army Signal Corps and operated by the Air Weather Service of the U. S. Air Force. The new experimental equipment consists of a central station at Kansas City, Missouri, and six auxiliary lightning detector stations at Tinker Air Force Base, Oklahoma; Fort Chaffee, Arkansas; Scott Air Force Base, Illinois; and civilian airports at Waterloo, Iowa; Huron, South Dakota; and Goodland, Kansas. Special radio receivers pick up static generated by lightning, register the time and compass direction, all of which is relayed to the central monitor in Kansas City. Operators can see every important lightning indication on a map. The automatic network can detect lightning up to 2,000 miles away and thus track position of storms.

Water Purification

Favorable results have been obtained in tests of three methods of removing radioactive contaminants from drinking water supplies. The Sanitary Engineering Branch of the U. S. Army Engineer Research and Development Laboratories reports favorable results using a standard purification unit known as an Erdlator, a mobile ion exchange unit, and an electrodialysis demineralization process. The tests were conducted at the Nevada Test Site, with the Office of Civil Defense Mobilization participating.

General Marshall Biography

A request for material on the life of General George C. Marshall has been issued by Forrest C. Pogue, Director of the George C. Marshall Research Center, Box 831, Lexington, Virginia. Photographs, letters and papers relating to General Marshall's career are requested for use in an authorized biography which Mr. Pogue is now writing.

Space-Photos Via Satellite

Active radio relay of "space-photos" from a ground station through the Courier communication satellite has been successfully performed, producing another scientific and practical "first" for the United States. The photograph was sent from the Army Signal Corps ground

station, Fort Monmouth, New Jersey, to the Army satellite and retransmitted to earth with practically no change in quality.

According to engineers at the U.S. Army Signal Research and Development Laboratory who developed both the Courier and the facsimile system, the spacephoto can be relayed through electronic equipment in the satellite in much the same way as radio-photos are sent on the ground. The experiment has established a basis for satellite storage and relay of all types of facsimile messages—photos, letters, maps, charts—between properly equipped ground stations throughout the world.

MAP Activities at Benning

The Military Assistance Program established following World War II is a daily working reality at the U.S. Army Infantry School, Fort Benning, Georgia.

About 300 officers from 47 nations visit Fort Benning annually under provisions of the Military Assistance Program. They are briefed on organization and operation of The Infantry Center and The Infantry School, inspect training facilities and observe instruction in classrooms and field. In addition some 600 students from 45 countries enroll in courses at The Infantry School.

Participating in the mobile training team phase of MAP, an officer from Fort Benning toured Europe late in 1959, visiting military schools in France, Italy, Spain and Greece. The trip was made as member of a four-man team to provide "a rapid transmittal of the latest developments in military doctrine from the U.S. Army Command and General Staff College and the Infantry, Armor and Artillery Schools to their counterpart schools among our allies."

The School's Editorial and Pictorial Office also distributes training literature to Military Advisory Groups or U.S. Military Missions in some 50 countries.

Automotive Supply Agency

The Military Automotive Supply Agency has been established at the Ordnance Tank Automotive Command in Detroit, Michigan to provide integrated supply management and procurement of military automotive supplies for all the military services.

Antarctic Construction

Years of research into arctic region construction by the Army will be put to use by the Navy in construction of a permanent type base at Byrd Station in the Antarctic. Originally built on a temporary basis during the International Geophysical Year, Byrd Station now will be made permanent, using plans, specifications, sources of supply for materiel and equipment developed by the Army during several seasons in Greenland and Alaska. The Army also is providing the Navy with training facilities, with eight Seabees now in Greenland receiving on-the-job training before going to the Antarctic.

Nike-Hercules Replaces Ajax

Under a continuing Army program to provide a more modern and effective air defense, atomic-capable Nike-Hercules air defense missiles will replace Nike-Ajax missiles in 18 metropolitan and important air base areas in the United States beginning this summer.

Areas affected are Boston-Providence, Chicago, Cleveland, Detroit, Fairchild Air Force Base in Spokane, Seattle, Hartford-Bridgeport, Loring Air Force Base in Maine, Los Angeles, Milwaukee, New York, Niagara-Buffalo, Norfolk, Philadelphia, Pittsburgh, San Francisco, Travis Air Force Base in California, and Washington-Baltimore. A total of 68 Nike-Ajax sites will be phased out in these areas.

Hercules, the first surface-to-air missile with an atomic capability, has three times the range and more than twice the altitude capability of the Ajax. Since Nike-Hercules is even swifter and more deadly, it is now possible to provide the same level of defense using one Hercules battery where previously several Ajax batteries were required.

Inter-Service Marksmanship

All U.S. Armed Services, including the Coast Guard, reserves and ROTC units will participate annually in an inter-service small-arms competition. The new program has been established as result of a memorandum of understanding recently signed by the chiefs of the armed services. The Air Force will conduct the inter-service pistol match; the Navy and Marine Corps will sponsor rifle competition; and the Army will be responsible for in-

ternational-type matches. It is planned to conduct the competitions annually, beginning this year.

ROTC Active Duty Plans

Graduates of the Reserve Officers Training Corps Program who will be commissioned between 1 May 1961 and 30 April 1962 will be ordered to active duty under the same plan as that prescribed for the preceding year. Present planning calls for 5,400 commissioned ROTC graduates to be ordered to active duty for two years. and more than 6,900 others to be ordered to active duty for training for six months. As far as possible. maximum consideration will be given to individual preferences.

World War II Art Collection

On the anniversary of the attack on Pearl Harbor, the Department of Defense accepted an extensive collection of art from *Life Magazine*, comprising more than 1,000 paintings, water colors and drawings representing work of 54 artists. The collection reflects the mood of World War II both at home and on the fighting fronts. It will be lodged permanently in a corridor in the Pentagon, which will serve as a gallery with the various works exhibited in rotation.

Miniaturized X-Ray

A compact diagnostic field x-ray unit—so small it can be carried in a medium-sized suitcase—has been developed by Army Medical Service. Previously, medical facilities in the field have used equipment weighing about a thousand pounds to achieve results comparable with those of the new 85-pound unit. A prototype of the small self-powered clinical X-ray operates on rechargeable batteries. The x-ray tube works in much the same way as battery-operated, portable strobe light photoflash units. The new machine was proved feasible following research on high intensity field emission electron sources at Linfield Research Institute, McMinnville, Oregon.

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Mobile Missile Power

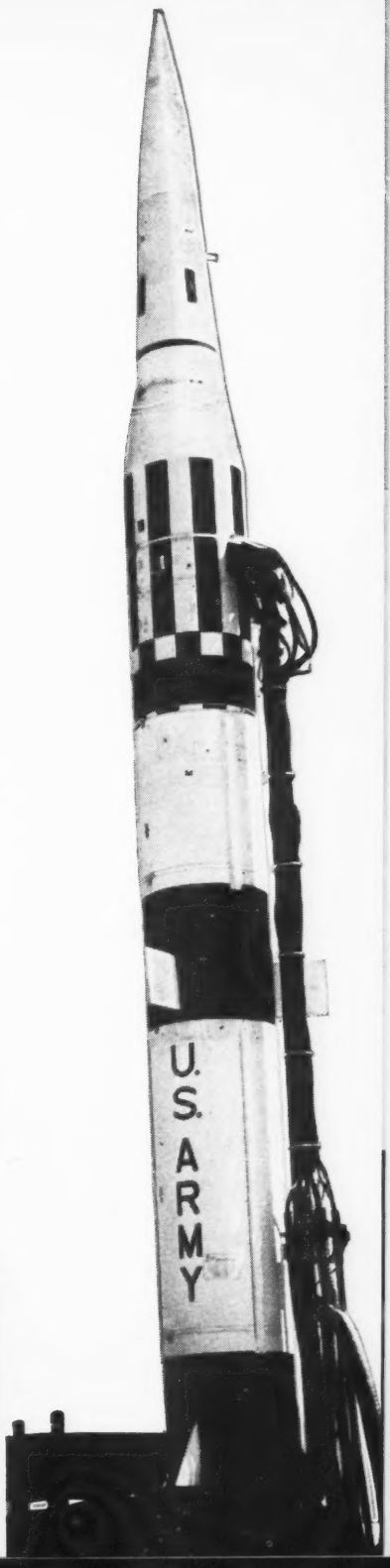
TAKING OFF with a roar from its transporter-erector-launcher, the Army's new configuration of the Pershing ballistic missile (*right*) was recently successfully test fired from Cape Canaveral, Florida. After the first stage of the solid-propelled Pershing burned out and dropped away, the second-stage motor fired, driving the warhead unit higher, faster and farther than in any previous Pershing test.

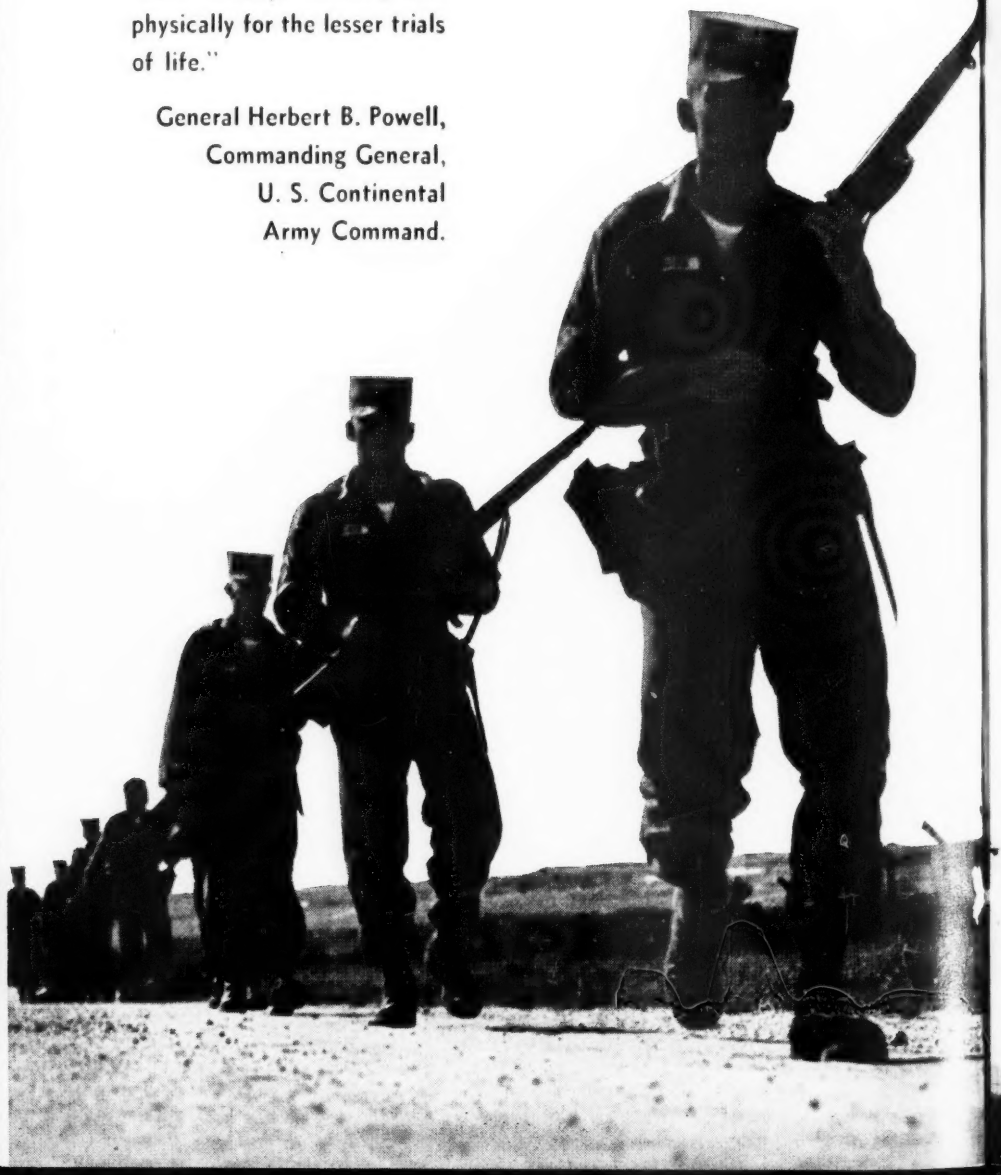
Instrumentation carried in the warhead unit measured stability and resistance to heat as it re-entered the atmosphere and plunged into the Atlantic.

The Pershing was fired from its transporter-erector-launcher which is designed to carry and erect the missile in the field. The launcher is mounted on a fully tracked vehicle, giving the system a high degree of mobility and portability.

Demonstrating these attributes *(below)*, a Pershing missile mounted on its self-contained transporter-erector-launcher rolls from a transport aircraft, ready to move to an unprepared site for firing.

Martin Company, of Orlando, Florida, is prime contractor for the Pershing system under supervision of the Army Ballistic Missile Agency, an element of the Army Ordnance Missile Command.



"It is precisely because military training is designed to develop man for the ultimate trial of combat that it is so effective in preparing them morally, mentally and physically for the lesser trials of life."

General Herbert B. Powell,
Commanding General,
U. S. Continental
Army Command.